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CINCINNATI PUBLIC SCHOOLS

Domestic Science

DEPARTMENT.

Course of Study





CINCINNATI, PUBLIC SCHOOLS. *Domestic*

*Course
in*

Domestic Science



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MATTER: ITS NATURE AND CHANGES.

Many substances that we are familiar with undergo changes. The burning candles change from an opaque solid to a translucent liquid. Salt, being mixed with water, becomes a clear liquid not distinguishable from water itself. Heat changes ice into water and water into steam.

The burning of wood, which is the uniting of the solid carbon of the wood with the gas, oxygen, form a gas carbon dioxide, which is quite different from oxygen. When the action is over, a handful of gray ashes is all of the solid substance left.

Some of these changes are only a change in the *form* of matter. The liquid candle grease will return to solid form when cooled; dissolved salt may be recovered by evaporating the water; steam may be collected and condensed into form of water again. These are called *physical changes*. That part of the melted candle which was burnt will not return to its original form. Burnt sugar will never be sweet and white again. The ashes can not be changed into wood. These changes are changes in the *composition* of matter, and are called *chemical changes*.

Elements and Compounds:—Some substances consist of but one thing, hence are called simple, such as iron, oxygen and carbon. A simple substance is called an *element*.

Some substances are composed of two or more elements, as water. What two elements make up water? A substance composed of two or more elements is called a *compound*.

In a *mixture* each substance keeps its own properties; in a *compound* these give place to new properties belonging to the compound.

The most common elements are:

1. *Oxygen*, an invisible, odorless gas which unites very readily with other elements to form compounds. The uniting of oxygen with other elements is called *oxidation*. *Example*: iron rust.

2. *Hydrogen* is an invisible gas. It will burn and unites with oxygen to form water.

3. *Nitrogen* is an invisible, incombustible gas. It does not unite readily, and the compounds into which it enters break up easily.

4. *Carbon* exists as an element in two forms—graphite, the "lead" in pencils, and the diamond. It enters into more compounds than any other element. It is contained in all organic substances, as is shown by their blackening (carbonizing) when heated.

FOOD IN ITS RELATION TO LIFE.

The body of the human being, like the bodies of most animals and plants, consists of organs or parts. The special work of each organ is called its *function*. What is the function of the eye? Of the lungs? Of the stomach? Of a leaf?

The various kinds of material composing the organs of the body is called *tissue*, bony tissue being found in bones, nerve tissue in nerves, muscular tissue not only in muscles, but in the organs.

The tissues of the body are made up of cells. These cells may be likened to the cells in the honeycomb or the bricks in the wall of a house.

In the cells of the body many *compounds* are found, most of them being combinations of some or all of the following elements: carbon, hydrogen, oxygen, nitrogen. It is estimated that *oxygen* forms two-thirds of the human body; *hydrogen*, one-eleventh; *nitrogen*, one thirty-ninth.

Food.—Since our bodies are composed of the elements—carbon, hydrogen, oxygen and nitrogen in different compounds—our foods to nourish the body, should contain the same elements. We find that food does contain these elements in various compounds. We divide the compounds into groups, called the *five food principles*—proteins, carbohydrates, fats, water, mineral matter.

Foods.	Organic.	1) Protein or building.	{ Albumen. Casein. Gelatin. Vegetable casein.	{ Meat. Milk. Eggs. Fish. Cheese.
		2) Carbo-hydrates or heat, fat and energy producing.	{ Sugar. Starch.	
		3) Fat or heat producing.	{ Vegetable. Animal.	
	Inorganic.	{ 4) Mineral matter bone forming. 5) Water.	{ Salt. Lime. Potash, etc	

Proteins contain compounds of *nitrogen*, so are called nitrogenous foods. Proteins are absolutely necessary to life, as they are the only foods which can repair and build muscular and other tissue. Proteins are found in meat, fish, eggs, milk, cheese, peas, beans, lentils and grains.

Carbohydrates are derived from vegetable sources, and include starches, sugars, cellulose and gums. They do not contain nitrogen. What do they contain? They yield heat and energy and may be changed into fat in the body.

Fats and Oils yield heat to body, and probably help to form fatty tissue. They are obtained from both animal and vegetable sources. They are composed of carbon and hydrogen, with less oxygen than carbohydrates.

Water constitutes about two-thirds to three-fourths by weight of the human body. Water is necessary to soften and dissolve the food; it carries food and dilutes the blood, helps to carry off waste material, and by evaporation, keeps the body at the normal temperature, 98° F. It also aids digestion and does important work in the body. It is composed of hydrogen and oxygen. We could not live without water.

Mineral matter includes compounds of lime, potassium, sodium, iron, etc. Common salt, a kind of mineral matter familiar to all, is the only mineral added in pure form to our food. Mineral matter is necessary to life, to digestion, to the blood. It helps to form bones, hair, nails and teeth. The mineral matter of foods is supplied principally in juices of fresh meats, fish, fruits and vegetables, and some small amount of cereals and grains.

DUST AND DIRT.

Dirt is anything unclean. As commonly used, the word includes remnants of anything, clean or otherwise, left where they do not belong, as sand, earthly particles, particles of wornout clothing, animal or vegetable refuse. Dirt may be wet or dry.

Dust is always dry, and the particles of which it is composed are so fine and so light in weight that there is always more or less of it floating in the air. Dust is made up of the same substance as dirt, only dried and ground exceedingly fine. It also includes tiny seeds capable of growth. Dust and dirt are always repulsive, because they mean disorder and carelessness; but when it is known that dust is usually accompanied by millions of the tiniest plants it is possible to imagine, some of them known to be the cause of decay of animal and vegetable substances, while others cause dangerous diseases, like diphtheria, consumption, etc., it becomes a matter of great importance to dispose of dirt and dust in such a way that these plants are killed and so prevented from doing further harm.

Dust Plants.—These tiny plants, so called because they are frequently found in dust, may be classed in general under three heads: *yeasts, moulds, and bacteria*. They are also called "germs" or "microbes." Germ means

that form which something grows, and microbe means a "little, living thing." The yeasts cause the fermentation of "working" of preserves and other foods. These are wild or uncultivated yeast plants and are of several species, similar in their habits of growth to the yeast used in bread-making.

Moulds grow and multiply rapidly in warm, moist places and destroy food and clothing. Mildew is a form of mould.

Bacteria.—The most important are the microscopic plants usually meant when germs are spoken of, some of which cause diseases; many are harmless; some are very useful and necessary. The scientific name of these plants is bacteria, a word which means "little rods." One is a bacterium two or more are bacteria. They are so named because many of them, when magnified many hundred times, are seen to be shaped like little rods or pencils. Bacteria are the smallest and simplest of known living things, each one being a simple cell, or exceeding small mass of living substance, or protoplasm—is soft, jelly-like, colorless and very nearly transparent and the cell wall is very thin.

Size—Bacteria are so small that they can not be seen without a powerful microscope, which causes them to appear several hundred times larger than they really are. It would take from ten to fifty thousand of them, side by side, to equal an inch.

Source—The home of many bacteria is in the upper layers of the earth, but, being so small, they are carried by the wind and rain and snow almost everywhere—in the air, in the water, in our food, on the bodies of men and animals, in their mouths, under the nails.

Conditions for Growth.—Like any other living thing, bacteria require moisture. Many require heat, but not all, as some can grow at freezing temperature. Some require air; others, very little. All multiply very rapidly under favorable conditions, one dividing into two, two into four, four into eight, and so on. This sometimes occurs as often as four times in twenty minutes, so, though exceedingly small, this rapid increase in numbers enables them to accomplish enormous results in a very short time. As they grow, some kinds of bacteria throw out poisonous substance which cause dangerous diseases. For example, the germs of the disease, contained in the matter coughed up by consumptives, drying on the sidewalks, etc., may be carried by the dust to well persons.

Bacteria can live and stay at rest a long time without food. Many forms of bacteria are harmless and some are very useful and necessary in many ways. As we can not readily tell the dangerous kind when present, we dispose of all dust and dirt by burning. Dark, damp places are most favorable for the growth of all germs, while fresh air and sunlight are great disinfectants.

METHODS OF COOKING.

Three things are essential to life—air, water, food.

Food is whatever nourishes the body. Cooking is making food ready to eat. This is done chiefly by means of heat.

REASON FOR COOKING.

Food is cooked—

1. To make it more attractive.
2. To make it more palatable.
3. To develop flavor.
4. To make it more easily digested.
5. To kill germs.

PLANT FOODS.

All plant foods undergo a kind of cooking by the heat of the sun, as do animal foods by the heat of the animal body.

COOKING.

The word cooking is derived from the Latin words meaning to boil, bake, seethe, dry or ripen.

Drying and ripening are natural cooking. Drying in the sun was prob-

ably the earliest mode of cooking; then roasting before the open fire, next baking in hot ashes; this last was the primitive oven.

METHODS OF COOKING.

The main methods of cooking are boiling, stewing, steaming, broiling, roasting, baking, frying and sautéing.

1. *Boiling* is cooking in boiling water. Food may be cooked in water which is hot but not boiling; this is often incorrectly called boiling.

2. *Stewing* is cooking slowly and a long time in a small quantity of water.

3. *Steaming* is cooking over the steam from boiling water.

4. *Baking* is cooking by the dry, confined heat of an oven.

5. *Roasting* is cooking in oven with a very small quantity of water.

6. *Broiling* is cooking by direct exposure to heat over fire.

7. *Frying* is cooking in enough hot fat to cover.

8. *To sauté* is to cook in small quantity of fat, cooking on one side then on the other. This is commonly called frying.

MEASURING.

Exact measuring is necessary to get the best and most uniform results in cooking.

Flour, meal, powdered sugar, soda and baking powder should be sifted before measuring.

All materials are to be measured level. Measure dry materials into a cup with a spoon, leveling the top with a knife. A cupful of liquid is all the cup will hold. A spoonful of liquid is all the spoon will hold.

To measure butter, lard, or any solid fat, pack solidly into the cup and level off with a knife.

To measure a spoonful or cupful of dry substance, heap materials on spoon or cup, lift it and level with the flat surface of a case knife.

Half a spoonful is a spoonful divided lengthwise. Quarter of a spoonful is a spoonful divided into half lengthwise and crosswise.

A speck is as much as will lie on the tip of a pointed knife.

ABBREVIATIONS.

tblsp. stands for tablespoon.

tsp. stands for teaspoon.

c. stands for cup.

g. stands for gill.

pt. stands for pint.

qt. stands for quart.

oz. stands for ounce.

lb. stands for pound.

spk. stands for speck.

min. stands for minute.

h. stands for hour.

EQUIVALENTS.

Measures.

3 tsp.—1 tbsp.

4 tbsp.— $\frac{1}{4}$ c.

16 tbsp.—1 c.

2 g.—1 c.

2 c.—1 pt.

2 pt.—1 qt.

4 qts.—1 gal.

2 tbsp. sugar—1 oz.

2 tbsp. liquid—1 oz.

Juice of one lemon—3 tbsp.

One rounded spoonful is equal to two level spoonfuls.

Weights.

2 c. liquid—1 lb.

4 c. flour—1 lb.

2 c. solid fact—1 lb.

2 c. granulated sugar—1 lb.

3 c. meal—1 lb.

2 c. solid meat—1 lb.

2 tbsp. butter—1 oz.

4 tbsp. flour—1 oz.

DISH-WASHING.

PREPARATION.

Scrape all food from dishes, rinse cups. Pile all dishes of one kind together. Soak in cold water dishes which have been used for milk, egg and starchy foods; those used for sugary substances, in hot water. Wipe greasy dishes with soft paper, then soak in hot water. Make ready two pans, the dishpan half full of hot, soapy water, the rinsing pan half full of clear, hot water. Drain the dishes in a draining pan or rack. Have a clean, dry place clear for dried dishes.

ORDER AND GENERAL DIRECTIONS.

Where there are many dishes, begin by washing cooking utensils. First the large kettles, then the smaller articles of kitchen ware. For these use a heavy dish-cloth and towel. Use sapolio to remove food that sticks or is burnt on. If tinware is discolored by food burned on, boil out with strong soda water. Use dish-cloth on ironware, a scrubbing brush, if necessary on enameled ware, tinware and wire strainers. Clean seams in utensils with a wooden skewer. Be careful not to wet the cogs of a Dover egg-beater. Wash the lower part and wipe off the handle with a damp cloth. Water washes the oil out of the cogs, making the beater hard to turn. Wash tea and coffee pots in hot water without soap, cleaning the spout carefully. Dry and leave uncovered for a while. Take clean water, soft dish-cloth and towel. Wash glass, silver, delicate china, cups and saucers, then the larger dishes. Do not put knife handles in water. Water discolors and cracks ivory and bone handles, and may loosen wooden ones. Polish steel knives with pulverized Bristol brick or sapolio, rubbing with a cork. Clean silver with whiting and soft cloth; polish with chamois. Wash dish and rinsing pans and wipe dry with a towel, not with dish-cloth.

CARE OF DISH-TOWELS AND CLOTHS.

Dish-cloths, dish-towels and sink cloths should be hemmed. Use each cloth only for the purpose for which it is intended. Dish-towels and cloths should be washed thoroughly after each using, scalded and dried out of doors if possible.

CARE OF THE SINK.

When dish washing is finished, wash every part of the sink with hot, soapy water. Wash above and around the sink. Use a wooden skewer to clean behind the sink pipes. Flush the sink with boiling water every day and once a week with a strong solution of washing soda.

SCRUBBING BOARDS AND TABLES.

Do not wash bread board or rolling pin in an iron sink. The iron will leave marks on them. Clean them at the table. Wash thoroughly with a wet cloth. Rub sapolio on the wet board, wet the scrubbing brush and scrub well with the grain of the wood; rinse off the suds and wipe as dry as possible. A pastry-board should be scraped with the grain of the wood and wiped with a cloth wet in cold water. Grease spots on unfinished woods are removed by using borax or ammonia.

CARE OF THE REFRIGERATOR.

The refrigerator should be looked over daily, that no food is left to spoil. Hot food or food with a strong odor should not be put into the refrigerator. Once a week everything should be taken out and every part of the refrigerator washed with a solution of washing soda, using a mop or small broom. Flush the waste pipe with the sal soda solution. Wipe as dry as possible, leaving the refrigerator open until thoroughly dry. Put shelves in the sun, in the open air, or dry near the fire. It is easier to prevent bad odors in a refrigerator than to remove them.

TABLE SERVICE.

On the proper table service much of the comfort, cheerfulness and refinement of the family depend. No amount of lavishness and perfection in the preparation of the food will compensate for poor arrangement and service in the dining-room. The most perfect order, and yet the greatest freedom, should exist.

No matter what the style of living may be—and this applies to the simplest as well as the most elaborate households—there should always be a care to make the table and food pleasing to the eye. Well-laundered table linen, tableware that has been properly washed and wiped and that is arranged in an orderly manner, are the strongest factors in making a table elegant and attractive. A few flowers loosely arranged, a bunch of ferns, or a small plant or fern will adorn and brighten a table more than any other one thing that can be used. Such decorations are in place on the humblest or the most sumptuous tables.

The table linen should be absolutely clean. The cloth should be long enough to hang well around the table. Under the linen cloth have a silence-cloth, either table felting or some other soft and heavy material. The table is sometimes used bare, with doilies. Place the tablecloth in the center of the table, having the folds straight with the edge of the table. Have center-piece, if used, exactly in center of table. Napkins, simply folded, unstarched, are placed at the left of the plate, two inches from edge of table. Arrange dishes systematically, although not necessarily in straight rows. When there are no warm dishes to be served, place a plate, right side up, for each person, having them arranged symmetrically around the table.

Place knife on right side, with sharp edge towards plate.

Place fork on left side, with tines up.

Place soup spoon at right of knife, bowl up.

Place teaspoon at right of soup spoon, bowl up.

Place glass, top up, upper right hand side, above knives.

Place the butter, or bread and butter plate, at the upper left hand side.

Place water bottle, milk, salt and pepper-cruets, etc., at corners of table.

Place soup ladle in front of the hostess, the handle to the right, bowl up.

Place carving knife at the right of the carver, fork at the left and gravy spoon at right.

Place several large spoons at each end of table.

Place dishes that are to be served at table directly in front of server.

When finger-bowls are used, put them on desert plates, with a doily underneath the bowl; place at left side of each person.

When fruit is served at first course, place finger bowls in center of cover.

Where the hostess pours the tea or coffee, arrange the service neatly in front of her.

Arrange chairs at sufficient distance from the table so they need not be drawn out when people are seated.

RULES FOR SERVING.

Cold food should be served on cold dishes; hot food on hot dishes.

When passing a dish, hold it so that the thumb will not rest upon the upper surface.

In passing dishes from which a person is to help himself, pass always to the left side, so that the food may be taken with the right hand.

In passing individual dishes, such as coffee, etc., set them down carefully from the right side.

When the dishes are being served by a person at the table, the waitress should stand at the left, hold the tray low and near the table. Take on the tray one plate at a time and place in front of the person for whom it is intended, setting it down from the right side.

When one course is finished, take the tray in the left hand, stand on the left side of the person and remove the soiled dishes with the right hand, never piling them on top of each other.

Soiled dishes should be removed first, then food, then clean dishes, then crumbs.

Fill the glasses before every course, without lifting them from the table.

Never fill glasses over three-fourths full.

Before the dessert is served, remove the crumbs from the cloth with a brush, crumb knife or a napkin.

Do not let the table become disorderly during the meal.

The hostess should serve the soup, salad, dessert, coffee, and, at a family dinner, the vegetables and entrees.

The host serves the fish and meat.

Whether waiting or being waited upon, remember that the Golden Rule is the best rule for table etiquette.

HOW TO CLEAN ROOM AND TABLE AFTER THE MEAL.

Brush the crumbs from the floor. Arrange the chairs in their places. Collect and remove knives, forks and spoons. Empty and remove cups.

Never set any food away on dishes used for serving.

Pile all dishes of one kind together.

Brush the crumbs from the cloth and fold it carefully in the creases.

If the napkins are to be used again, place them, neatly folded, in their individual rings.

FIRE AND FIRE BUILDING.

Heat is produced in four ways—1, by the sun's rays; 2, by friction or rubbing; 3, by combustion or burning; 4, by electricity.

Combustion is the uniting of two or more elements to form a new compound. Combustion always produces heat, and, if rapid, sometimes light.

In order to have a fire three things are necessary:

1. Fuel or something to burn.

2. Heat, to make the fuel *hot enough* to burn or to reach its "kindling point."

3. Air to keep it burning or support combustion.

Pure air is composed of oxygen and nitrogen. The oxygen is the part needed to keep the fire burning.

Fuel is anything used to make a fire. The kinds of fuel most commonly used in ranges are wood, coal and charcoal. Gas, gasoline, kerosene are burned in stoves prepared especially for their use. Fuels are composed mostly of carbon and hydrogen, with a small amount of oxygen.

When fuel is heated sufficiently to burn, the carbon of the fuel unites with the oxygen of the air, and forms a gas, carbon-dioxide. The hydrogen of the fuel unites with the oxygen of the air to form watery vapor. Carbon dioxide and watery vapor are thus known as the "products of combustion." Ash is what remains after all that is combustible has been burned.

Fires are usually inclosed in iron boxes called ranges or stoves. In front, or at one end, is the fire box, or the part of the stove where the fire is made. This has a lining of fire brick to protect the iron from the hot coals. At the bottom is the grate, made of bars of iron with openings between, to allow the air to go up through the fire and also to allow the ashes to drop into the ash pan. Every stove must have two openings—one to supply air and another to allow smoke, gases, and watery vapor to escape through the chimney. The slides controlling these openings are called *dampers*. The slide which controls the opening supplying fresh air is in the front and *below* the fire box. This is called the fresh-air damper. The slide controlling the opening in the chimney is called the chimney damper. In cooking stoves and ranges there is another damper so arranged, as to force the hot air around the oven and so heat it before reaching the chimney.

FIRE-BUILDING.

Free the fire box from the ashes; remove covers and brush soot from them. Lay the fire, putting in crumpled newspapers or shavings; next dry kindling arranged crosswise; then coal on top of the fire box. Open dampers and light the fire from the grate in front. The stove may be blackened when the fire is lighted if *dry polish* is used. *Liquid polish* usually contains combustible fluid and should be used only when fire is out and stove is cold.

Gas Range.—To light a top burner strike a match, turn on the cock and apply the match *after* the cock is turned. To light the oven burner, open the lower door, turn on the pilot light and light from the outside. Turn on the burner stop cocks. When both are lighted, turn off the pilot. The gas flame should be blue; a yellow or red flame does not give the heat, smokes and wastes the gas, and is caused by the flame flashing back into the air chamber. The gas should be turned off and the burner relighted.

WATER.

WATER A NECESSITY.

Without water there is no life; a seed kept dry never sprouts; an unwatered plant dies.

Water occurs more commonly and in larger quantities than any other liquid.

SOURCE.

As rain it collects in lakes, rivers, springs, etc.

KINDS.

Two kinds, hard and soft. Hard water has mineral matter dissolved in it. Soft has little or none.

FACTS:-

Because of its solvent power, water is rarely found perfectly pure; it not only dissolves mineral matter, but also organic (animal or vegetable).

Water which has been standing in the pipes several hours should not be used for cooking or drinking purposes, as it dissolves the lead.

Water dissolves almost anything with which it comes in contact.

Hot water dissolves more things than cold.

Soft water should be used for cooking.

TO SOFTEN HARD WATER.

Slightly hard water may be softened by boiling. Boiling will also destroy the germs.

Clear water becomes no hotter than 212°, consequently fuel is wasted in keeping up more than is required to keep the water at the boiling point.

Economize heat by keeping the vessel covered.

Water expands in heating; if kettle is too full, it will boil over.

Water loses its gases in boiling, giving it a flat taste—replace them by pouring from one vessel to another.

DRINKING WATER.

Good drinking water is a clear, colorless, almost tasteless, odorless liquid, free from disease germs and contains a small amount of mineral matter. If there is any doubt about its purity, it should be boiled ten minutes to kill the germs.

TEMPERATURE USED IN COOKING.

Test with a thermometer.

- (a) Luke warm, 98°; body heat.
- (b) Scalding, 150°; too hot to keep the fingers in.
- (c) Simmering, 185°; small air bubbles appear at bottom and sides of vessel, causing a movement of water.
- (d) Boiling, 212°; large bubbles appear on the surface, all over the water; break; steam escapes.
- (e) Freezing, 32°; water changes to ice and ice changes to water.

USES TO THE BODY.

Water constitutes about two-thirds or three-fourths of the body, consequently we must take about four pints daily, part of which we drink and part of which is in our food.

- 1. Water quenches the thirst.
- 2. Water dissolves and helps digest the food.
- 3. Water carries off waste products.
- 4. Water keeps the temperature normal.

BEVERAGES.

TEA AND COFFEE.

Tea and coffee are not foods, but beverages that have a stimulating effect on the nerves; they relieve fatigue and prevent tissue from wearing out.

Do not use too much or too strong tea and coffee, especially for young people.

Tea is valued for its *theine*; coffee, for its *caffeine*.

Both contain tannin, a bitter substance very injurious to the stomach.

Boiling tea or letting tea or coffee stand longer than five minutes on the leaves or grounds will extract this tannin.

GENERAL RULES.

1. Keep the tea and coffee in closely covered jars. Buy coffee un-ground.
2. Do not use tin tea or coffee pots.
3. Scald tea and coffee pots before using.
4. Use freshly boiled water in making tea and coffee.
5. Stir tea before serving.
6. Serve coffee with cream or hot milk.

RECIPES—TEA.

Put the tea in a scalded teapot and pour the boiling water over it. Steep five minutes. Strain and serve either hot or iced.

RUSSIAN TEA.

Make tea by above recipe and serve with a slice of lemon and sugar; serve hot.

BOILED COFFEE.

Mix with the coffee one tablespoonful of cold water; add boiling water and boil three minutes. Remove to back of stove, add another tablespoonful of cold water and settle five minutes. Crushed egg shells may be mixed with the coffee to help clear it.

FILTERED COFFEE.

Put the coffee into the upper part of a scalded filter coffee pot and pour the hot water slowly through it. The coffee pot must be kept hot while the coffee is being made.

COCOA.

Mix cocoa, sugar and salt with water and boil five minutes. Stir this into hot milk and cook in double boiler one-half hour. Beat with a Dover beater several minutes and serve.

1 tsp. tea.
1 c. boiling water.

2 tbsp. coarsely ground
coffee,
1 tbsp. cold water,
1 c. boiling water,
1 tbsp. cold water.

1½ tbsp. finely ground
coffee,
1c. boiling water.

3 tbsp. cocoa,
3 tbsp. sugar,
¼ tsp. salt,
2 c. milk,
2 c. water.

FRUIT.

Experiment 1. Grate and squeeze an apple.

What does so much juice mean?

What makes an apple hard?

Experiment 2. Taste the apple.

What substance does it contain?

With a few exceptions fresh fruit has little nourishment in it, but is nevertheless an essential food. Fruits contain a large amount of water, cellulose, some sugar and mineral salts, and are eaten for their delicious flavor, refreshing juices and mineral compounds.

These mineral salts supply elements which are essential to pure blood, and for this reason fruit should form an important part of our diet, especially in summer.

METHODS OF COOKING USED IN THIS LESSON.

Baking is cooking in an oven, by the application of heated air. Stewing is cooking for a long time in water, usually below the simmering point.

DRIED FRUITS.

Prunes, apricots, peaches, dates, figs, raisins and currants are our common dried fruits. When fresh they contain from 80 to 90 per cent water, but this is reduced to nearly 20 per cent in drying. In cooking, the dried fruit will take up only the amount of water lost in drying.

GENERAL RULES FOR COOKING DRIED FRUITS.

Wash thoroughly but quickly in cold water, taking each piece in the fingers. Change the water until the fruit is clean. Let soak in cold water several hours, allowing ¾ quart of water to ½ pound of fruit. Cook in the same water until soft. Long soaking and quick cooking gives the most

natural flavor. Sweeten to taste and cook five minutes longer. If the syrup is too thin, remove the fruit and allow the syrup to cook until thickened; then pour over the fruit.

STEAMED APPLES.

Core and pare sound, tart apples. Place on a plate in a steamer and allow to steam until tender. Arrange on a glass serving-dish and pour syrup over them.

SYRUP.

Amount for eight apples. Cook the sugar and water together, without stirring, for five minutes.

1 c. sugar,
 $\frac{1}{3}$ c. hot water.

BAKED APPLES.

Select sound, tart apples; wash, remove the core, and, if the apples are thick-skinned, they should be pared. Place in an earthenware or granite baking dish and pour one tablespoonful sugar, mixed with a little spice, into the cavity in each apple. Pour enough boiling water around the apples to cover the bottom of the baking dish, and bake until soft in a hot oven, frequently dipping the syrup in the pan over the apples. Serve hot or cold with milk or cream.

STEWED PRUNES.

Cook prunes according to general directions for stewed fruit. Flavor with the sugar and sliced lemon.

1 lb. prunes,
 2 tbsp. sugar,
 1 lemon.

UNCOOKED APRICOTS.

Wash apricots carefully and let them stand in cold water 12 hours. Drain off the water and cook with the sugar 20 minutes. Pour this over the fruit and let stand several hours. Again drain off syrup and bring to the boiling point. Pour over the fruit. Serve cold.

3 c. apricots.
 4 c. water,
 $\frac{1}{2}$ c. sugar.

CRANBERRY JELLY.

Pick over and wash the cranberries, cook them slowly with the water for about fifteen minutes, and press through a strainer. Return to the fire and add the sugar, stirring until it is dissolved. Boil without stirring five minutes longer; pour into a mould and let it stand until firm enough to turn out. Serve with poultry, mutton or game.

1 qt. cranberries,
 1 lb. sugar,
 1 c. water.

RHUBARB SAUCE, STEAMED.

Cut off the leaves. Wash the stalks and cut them into $\frac{1}{2}$ -inch lengths. To each pint of rhubarb add one cupful of sugar and cook it in a double boiler till soft. Add more sugar if it tastes too sour. Do not stir it. The pieces of rhubarb should be unbroken.

BAKED.

Prepare and sweeten the rhubarb as for steaming. Cook it in a deep dish in a moderate oven until tender and deep red in color.

POTATOES.

The Potato.—If we examine the potato, we find small scars, called "eyes," on the surface. From these eyes sprouts will appear if the potato is placed in the earth or kept in a warm, dark place. These eyes, then, must be buds, and the potato a stem, not a root; roots, or linearly, do not bud. A thickened, underground stem like this of the potato, is a *tuber*.

Experiments to determine composition:

(a) Pare and grate part of a potato. Press in a cheese cloth. Dry what remains in cloth.

(b) Put cornstarch, sugar, salt and sediment from potato liquid in test tubes; add iodine to each. Note reaction.

(c) Cook liquids in test tubes. Which thickens and which do not?

COMPOSITION.

1. Water—about 75%.
2. Starch—chief foodstuff in potatoes—about one-fifth of all.
3. Cellulose or woody fibre—forms walls of cells too tough to be digested—little food value.
4. Potash and other mineral salts—lying mostly under skin.

The sweet potato differs from the white potato chiefly in containing sugar.

FOOD VALUE.

Potatoes contain too small a quantity of foodstuffs to be valuable if eaten alone. Eaten with meats and richer foods, they form an important article of diet and one we do not tire of, as they can be cooked in such a variety of ways.

BAKED POTATOES.

Select medium-sized; scrub clean. Bake in moderate oven on grate until soft; about 45 minutes, turning occasionally. When done, press in cloth until skin breaks to allow steam to escape. Serve in folded napkin or uncovered dish.

STUFFED POTATOES.

Bake large potatoes; cut lengthwise through the center. Remove inside of potato; mash, season, return to shell and brown in oven.

6 baked potatoes,
2 tbsp. butter,
 $\frac{1}{4}$ c. hot milk,
 $\frac{1}{8}$ tsp. pepper,
 $\frac{1}{2}$ tsp. salt,
Chopped parsley,
Or grated cheese,
Or white or whole egg.

BOILED POTATOES.

(Put water on to boil.)

Select potatoes of uniform size; pare them; remove all eyes and spots and put into boiling salted water and boil gently about 30 minutes or until tender when tried with fork. Drain off water and shake gently over fire to make dry and mealy. When potatoes are cooked with skins on, scrub clean and pare off a strip around center to prevent potato from bursting.

MASHED POTATOES.

Boil potatoes until tender; drain off water; dry over stove and mash in hot pan; add seasoning and hot milk. Beat with fork to make light and creamy; heap on warm dish without smoothing the top.

6 medium sized potatoes,
 $\frac{1}{2}$ tsp. salt,
1 spk. pepper,
1 tbsp. butter,
2 tbsp. milk.

POTATOES IN WHITE SAUCE.

Cut cold boiled potatoes into $\frac{1}{2}$ -inch cubes; make a white sauce; add potatoes and heat; thoroughly chopped parsley may be added just before serving.

1 c. potatoes.
1 c. milk,
2 tbsp. butter,
2 tbsp. flour,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper,
Chopped parsley.

FRENCH FRIED POTATOES.

Wash and pare potatoes cut in half lengthwise; cut half in pieces like section of an orange; let stand in cold water 20 minutes. Drain, dry and fry in smoking hot deep fat. Place on clean brown paper to absorb grease. Sprinkle with salt.

6 medium sized potatoes.

LYONNAISE POTATOES.

Cut potatoes in cubes; melt butter in hot pan; stir in onions, and, when brown, add potatoes sprinkled with salt and pepper; stir occasionally until golden brown; add parsley.

1 c. cold boiled potatoes,
 $\frac{1}{4}$ tsp. salt,
Spk. pepper,
2 tbsp. butter,
1 tbsp. chopped onion,
2 tbsp. chopped parsley.

VEGETABLES.

"The secret of the cooking of vegetables is the judicious production of flavor."—*E. H. Richards.*

We eat as vegetables the fruits, or seed vessels, of some plants; of others, the root, the leaves or some other part. Vegetables, like fruits, contain salts important to health. Vegetables chiefly valued for these salts are frequently eaten raw; to this class belong lettuce, celery, cucumbers, and all "salad" plants.

There are two classes of vegetables—those growing under ground, such as potatoes, carrots and parsnips, and those growing above ground; or green vegetables, such as lettuce and spinach.

Vegetables are economical food when used in season and are a very necessary part of the diet. In cooking those rich in mineral such as spinach, peas, oyster plant, etc., a small amount of water should be used, so that the minerals may not be lost by dissolving in the water.

The woody part of vegetables is called cellulose. This is not digestible, but is important and is suitable to combine with such concentrated foods as eggs and milk. If possible, at least two vegetables should be found in every dinner, and vegetables should form a large part of our diet in the spring and summer.

RULES FOR COOKING VEGETABLES.

1. Use vegetables which are in season, and select medium-sized or small rather than large vegetables.

2. Wash thoroughly in cold water, and, if wilted, allow to soak until freshened.

3. Green, above-ground vegetables should be cooked in boiling, salted water, uncovered, using two teaspoonfuls of salt to one quart of water.

4. Underground vegetables should be cooked in boiling, salted water, covered.

5. Strongly flavored vegetables, such as cabbage and onions, should be cooked uncovered. Change the water over onions every ten or fifteen minutes while cooking.

6. Vegetables should be cooked only until tender and served plain, with salt, pepper, butter and milk or creamed with a white sauce.

7. Use the cooking water, if palatable, in sauces, soup-stock, cream of vegetable soup, etc.

8. The time required to cook any given vegetable depends upon its size, age and freshness. Dried or wilted vegetables cook more quickly if first soaked in cold water.

BOILED SPINACH.

Put water on to boil. Remove the roots and pick over the spinach; wash in several waters; place in a kettle; add two quarts of boiling salted water to one peck of spinach; drain when tender; chop fine; reheat, season with salt and pepper and butter. Place on a platter and garnish with slices of hard-cooked egg and surround by a thick white sauce.

FRIED TOMATOES.

Cut a thin slice from top and bottom of each tomato; cut them in two; season each slice with salt, pepper and sugar; dredge well with flour, brown each side in hot butter, place on rounds of toast. Make a gravy by stirring 1 tbsp. flour in the butter left in the pan when smooth, return to the fire, add gradually 1 c milk, stir and cook 10 minutes, pour around the tomatoes.

CREAMED CABBAGE.

Remove the outside leaves; cut the cabbage in halves and slice. Place to cook in boiling salted water; when tender, drain and add the white sauce. Melt the butter; add flour and stir until smooth; gradually add the hot milk and cook 10 minutes. Add salt and pepper and remove from fire.

4 c. cabbage,
White sauce,
1 c. milk,
2 tbsp. butter,
2 tbsp. flour,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper.

BOILED CABBAGE.

Put water on to heat. Dice the cabbage; cover with boiling, salted water and cook, uncovered, until tender; drain; season with salt, pepper

and butter to taste. Cabbage is sometimes boiled in meat stock, in this case it needs less seasoning.

BOILED BEETS.

Put water on to heat. Wash beets carefully, so as not to break the skin; leave on about an inch of the tops and the whole root. Cook in boiling water, time required varies from one hour to four. When tender, plunge in cold water and rub off the skins. Serve hot, sliced and seasoned with salt, pepper and butter, or let stand in vinegar to which has been added a little sugar, cinnamon and allspice.

ASPARAGUS.

Put water on to heat. Cut the stalks off as far down as they are brittle; wash and place to cook in boiling, salted water; cook until tender. Drain and season with butter and pepper. Serve on strips of toast buttered and moistened with the cooking water.

CREAMED ONIONS.

Put water on to heat. Peel the onions in cold water. If they are small, leave them whole; if large, cut in halves or quarters. Place to cook in boiling water uncovered. Change water every ten minutes. Add salt to the last water. When tender, drain and cover with a white sauce made the same as for creamed cabbage.

CEREALS.

Cereals are grains or grasses the seeds of which are used for food.

KINDS.

Wheat, oats, Indian corn, rye, barley, rice, buckwheat; from these are prepared the various breakfast foods.

COMPOSITION.

Starch, cellulose, protein, mineral salts, fat and water.

STARCH.

Starch is a fine, white glistening powder, insoluble in cold water, but partially soluble in hot water, with which it forms a jelly-like paste.

WHERE FOUND.

Starch is found and stored up by many growing plants as food for the young shoots, collecting in autumn, to be used in the spring. Starch is found in abundance in the cereals.

CLASS.

Starch is one of the heat and energy-producing foods, and belongs to the carbohydrate group. Starch is composed of carbon, oxygen and hydrogen. When heated, oxygen and hydrogen pass off as water, leaving the carbon.

FOOD VALUE.

Cereals are important foods, rich in tissue-building substances.

OATMEAL AND CORNMEAL.

Oatmeal and cornmeal contain more fat than other grains and so are especially good as winter foods.

Rice contains more starch and less fat than any other grain; making it a good food for tropical countries, and one of the most easily digested of starchy foods; use it in place of potato, or combine it with eggs, milk, etc.

Laundry starch is made from corn.

DIRECTIONS FOR COOKING CEREALS.

1. Stir cereals gradually into the required quantity of *boiling water*, allowing 1 teaspoonful salt to each cup of cereal.

It is boiled to soften the woody fibre or cellulose, and swell the starch. Salt is added to give flavor.

2. Fine granular cereals, mix with cold water to keep them from lumping.

3. Stir coarse, flaky cereals with a fork.

4. Prepared cereals, cook *twice* as long as directed on the package.

Cook rapidly at first, directly on the stove, about ten minutes. Then place it over boiling water and cook thirty minutes longer.

5. To save time, soak coarse cereals in water before cooking, then cook several hours.

Serve cereals with milk or cream to supply fat. For variety, stir into cereals figs or dates cut into pieces before serving. Serve also with bananas sliced, and with prunes or baked or steamed apples. Eat something solid with cereals. Why?

TABLE FOR COOKING CEREALS.

KIND.	QUANTITY.	WATER	TIME.
Rolled Oats.....	1 cup.	4c.	3 to 6 hours.
" Avena	1 "	"	"
Rice (steamed).....	1 "	2¾ to 4c.	45 to 60 min.
" (boiled)	1 "	6 cups.	25 minutes.
Cornmeal	1 "	3½ "	2 hours.
Oatmeal			
Cracked Wheat.....	1 "	4 "	4 "
Hominy (fine).....	1 "	4 "	4 "
Wheatena, Cream of Wheat, etc.	1 "	3¾ "	30 minutes.

STEAMING.

In steaming, heat is applied by means of steam. It is a form of boiling.

WAYS OF STEAMING.

1. Cooking in a double boiler; the upper one, holding the food, fits tightly, half-way down in the lower one, which contains the boiling water.
2. Cooking in a steamer or covered pan with perforations in the bottom. This is placed over boiling water, the food is kept out of the water but in direct contact with the steam.
3. Cooking in a covered mold, which is placed in a kettle of boiling water on a trivet or muffin ring, allowing the water to be under as well as around it. The kettle should be closely covered, to keep in the steam, and the water kept boiling steadily the required time.

ECONOMY.

Steaming is the most economical way of cooking.

BOILED RICE.

Boil the water. Wash rice carefully. Keep water boiling rapidly, and add rice slowly so as not to stop the boiling. Stir at first with a fork to keep grains from settling on bottom of pan. Boil uncovered 25 or 30 minutes. Turn into a strainer to drain, pour one cup of hot or cold water over, return to pan and stand in oven a few minutes to dry. Add the salt when nearly done and the raisins if desired.

1 c. rice,
6 to 8 c. boiling water,
1 tsp. salt,
½ c. raisins.

USES FOR STALE BREAD.

Experiment 1. Put some flour in a small frying pan over a low fire, and stir as it heats. What happens to it?

Experiment 2. Put some of this browned flour into water and boil. Does it grow thick? Why not? Test with iodine. Do you get the blue color? Give the reason for the fact you observe.

DEXTRINE.

Whenever starch is heated to 320 degrees a new substance, named dextrine, which somewhat resembles sugar, is formed. Dextrine differs from starch in that it dissolves, does not thicken mixtures or give a blue color with iodine. Dextrine is found in the crusts of bread or cake and in baked potatoes. Also in prepared foods like Grape-nuts and Force.

By digestion foods are rendered soluble. Toasted bread is more digestible, and therefore has a higher food value than fresh bread, partly because it breaks up into small pieces very readily, but chiefly because much of the starch has been changed to dextrine.

TOAST.

Cut stale bread into slices one-fourth of an inch thick. Put them into

a toaster, move it gently over the fire until dry, then allow it to become a light brown by placing it nearer the heat and turning constantly. A hot, clear fire should be used in toasting.

CROUTONS.

Cut pieces of stale bread into one-third inch cubes, and brown in the oven. Stir with a spoon occasionally, so that they will brown evenly. Serve with soup.

DRIED BREAD CRUMBS.

Crusts and small pieces of bread should be dried in a cool oven. Roll them on a pastry-board or put through a meat-grinder. Crumbs must be sifted. Use them to cover articles of food to be cooked in deep fat, for the top of scalloped dishes, in making dressing for poultry, etc. Crumbs should be kept in jars with a piece of muslin over them.

HOT CABINET PUDDING.

Butter a mould, using all of the butter; sprinkle sides and bottom with the currants. Lay the bread crumbs in the mould in layers, with raisins between the layers. Beat the eggs, add sugar, salt and nutmeg, then the hot milk. Pour this mixture over the bread, let stand in a cold place one hour and then steam one hour, steam one-half hour if moulded in cups. Turn out on a platter, serve with cream or hard sauce. This pudding may be baked by placing the mould in a pan of hot water in a moderate oven. Do not allow the water in the pan to reach the boiling point. For chocolate pudding omit the raisins, currants and nutmeg, and use instead one oz. of chocolate melted over hot water, or two tablespoonfuls of cocoa. If uncovered or individual moulds are used cover with oiled paper before placing in the steamer.

4 c. hot milk,
2 c. bread crumbs,
2 eggs,
1 tbsp. butter,
 $\frac{1}{4}$ c. sugar,
 $\frac{1}{4}$ c. raisins,
 $\frac{1}{4}$ c. currants,
 $\frac{1}{4}$ tsp. nutmeg.

MILK.

ANALYSIS OF MILK BY EXPERIMENT.

Experiment 1. Drop milk or cream on a blotter or unvarnished wood. What kind of a spot does it make?

Experiment 2. Test with iodine. Is starch present?

Experiment 3. Boil some milk. Something rises to the top.

Experiment 4. Add an acid. What happens?

AVERAGE COMPOSITION OF MILK.

Proteins (<i>casein</i> small amount of <i>albumen</i>).....	3.3 per cent.
Carbohydrates (milk and sugar or lactose).....	5 "
Fat (cream)	4 "
Mineral matter7 "
Water	87 "

Milk is the sole food for the young of many animals. It contains all the elements needed for the nutrition of the animals for which it was intended, hence is often called a "perfect food." For adults, milk is not a perfect food, because the amount of water is too great. Another reason is that the digestive organs need a certain amount of waste materials to give bulk to the food and thus assist the action of the stomach and the intestines.

It may be safely said, that for those in ill health, no other single food is of as much value.

Casein is the most important proteid in milk. It is coagulated by acids, as vinegar, causing a solid curd to separate from the liquid part called "whey."

Milk turns sour because of an acid formed by bacteria. This acid is called lactic acid. The coagulated casein or curd of milk is used in making cheese.

The film which rises to the top of milk when heated in an uncovered vessel is mostly albumen, with some small part of casein. The sugar found in milk is lactose. It is less sweet and less soluble than sugar cane.

The *whey* consists chiefly of water, having in it the dissolved sugar, mineral matter and other ingredients of milk.

The *fat* of milk is present in form of minute globules. Being the lightest part of milk, they rise to the top, forming a layer of cream. When shaken or churned these tiny globules stick together forming butter. The remaining milk is called buttermilk. Butter can be made from fresh sweet cream, but more frequently is made from cream which has been allowed to sour or "ripen." This ripening process is known to be due to the action of certain bacteria. Formerly cream was left to ripen of itself but the flavor varied. Now the desired flavor can be given to butter at any time, because the bacteria producing the best aroma have been separated and cultivated by themselves forming what is known as "pure culture." These bacteria are kept growing under proper conditions and are sold under the name of "butter cultures," for the purpose of producing the fine flavor of butter.

Bacteria grow very rapidly in milk, therefore the utmost cleanliness should be observed in the handling, storing and serving milk. In order to be sure milk is free from germ life it should be sterilized.

STERILIZED MILK.

Fill sterilized bottles nearly full of milk and cork with cotton that has been baked in the oven. Place bottles on rest in deep pan so they will not touch the bottom. Fill pan with cold water as high as the milk in the bottles. Heat to 158 degrees F. Remove to back of stove and keep at that temperature 30 m. Cool by placing bottles in luke warm water, then in cold. Keep in cold place until ready for use.

BUTTER.

Shake the cream in wide-mouthed jar until butter separates from liquid. Collect particles and wash in cold water until water is clean, pressing with wooden spoon. Put into dry bowl and sprinkle with salt and work in well.

$\frac{1}{2}$ pt. cream,
 $\frac{1}{8}$ tsp. fine salt.

RENNET CUSTARD OR JUNKET.

Heat milk in double boiler; add sugar and flavoring and stir until sugar is dissolved. Add rennet and pour into dish in which it is to be served. Cool and serve plain or with cream. Junket tablets may be used instead of rennet.

2 c. milk,
2 tbsp. sugar,
2 tsp. liquid rennet,
1 tsp. vanilla.

WHIPPED CREAM.

Set bowl of cream in pan of ice water and beat with Dover beater until stiff; then add sugar and flavoring. Keep in cool place.

$\frac{1}{2}$ pt. cream,
2 tbsp. powdered sugar,
 $\frac{1}{4}$ tsp. vanilla.

CORNSTARCH MOULD.

Heat milk, mix cornstarch, sugar and salt. Add hot milk slowly, stirring all the time. Cook in double boiler 20 m. Remove from fire, add flavoring and turn into mould that has been wet with cold water. Serve with cream or fruit.

4 c. milk,
4 tbsp. cornstarch,
5 tbsp. sugar,
1 tsp. flavoring,
Spk. salt.

CHOCOLATE CORNSTARCH MOULD.

Two or three tablespoons of cocoa added to the dry materials and cooked as above make the chocolate mould. Serve with cream.

MILK OR CREAM SOUPS—WITH SAUCE.

Cream soups are a combination of white sauce and strained vegetable pulp. A puree is the pulp of a cooked vegetable, strained and thinned slightly with milk or cream.

A cream of vegetable soup is a very thin puree.

The vegetables most commonly used are peas, beans, lentils, potatoes, corn, celery, spinach and asparagus.

Old and tough vegetables may also be used in making these soups as the old or tough part is sifted out.

Cream soups are economical and nourishing and should be served frequently. They are too rich to precede a heavy meal and so are better served at luncheon than at dinner.

GENERAL DIRECTIONS.

Cook the vegetables until very tender, press through a strainer and add the sifted pulp to the hot milk.

The butter and flour should be mixed to a smooth paste and stirred into the hot liquid. Cook until smooth, season and serve with croutons.

1 qt. milk,
1 to 2 cups of vegetable
pulp,
2 tbsp. butter,
1 to 2 tbsp. flour,
1 tsp. salt,
A few grains to $\frac{1}{4}$ tsp.
pepper.

If the soup is too thick it may be thinned with a little hot milk or water.

To make the soup richer, add $\frac{1}{2}$ cup cream or one beaten egg immediately before serving. The flour is used in the cream soups as a thickening and binding material. Heat causes a softening of the starch which served to bind the liquid and solid parts of the soup together.

The butter and flour may be added in the following ways:

1. Melt butter and stir in dry ingredients.
2. Mix butter and flour together cold.
3. Flour blended with a little cold milk.

RECIPES.

WHITE SAUCE.

Sift the dry ingredients together; melt the butter in a saucepan and add the dry ingredients, pressing out the lumps with the back of the spoon. Add the milk gradually and cook until smooth.

White sauce is used on green vegetables, creamed meats and fish, croquettes, creamed toast, and as a foundation for creamed soups.

CREAM OF GREEN PEAS SOUP.

Cook the peas until tender and pass through a strainer. Blend with milk, seasoning and flour mixed with the butter, according to the general directions.

2 tbsp. flour,
2 tbsp. butter,
1 c. milk,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper.

1 can peas,
2 tsbp. flour,
2 tbsp. butter,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper,
1 qt. milk,
Small piece onion.

CREAM OF CELERY SOUP.

Wash celery, cut into pieces and boil in water until tender; then press through a strainer. Cook the milk and onion together ten minutes and add the milk to the sifted celery. Thicken and season according to the general directions.

1 qt. boiling water,
1 pt. milk,
 $\frac{1}{2}$ small onion,
3 tsbp. flour,
3 tsbp. butter,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper,
2 or 3 cups celery pulp.

POTATO SOUP.

Boil the potatoes until soft; then drain and mash them. Cook the onion in the milk, add salt and pepper and when the potatoes are mashed, add them to the scalded milk. Rub through a strainer and beat. Add the flour and butter according to general directions; cook until smooth, add parsley and serve with croutons. Beef drippings may be used in place of butter.

3 potatoes,
3 c. milk,
 $1\frac{1}{2}$ c. water,
 $1\frac{1}{2}$ small onions,
 $1\frac{1}{2}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper,
3 tsbp. butter,
3 tsbp. flour,
1 tsbp. choppe parsley.

TOMATO BISQUE.

Put the tomatoes on with the spice and onion and simmer ten minutes, then rub through a strainer. Scald the milk and add the butter, flour, salt and pepper according to general directions. Return the strained tomatoes to the fire and add the soda and sugar; allow to boil up then add *it to the thickened milk* and serve at once, with croutons. Do not allow the soup to boil after the tomatoes have been added to the milk.

1 pt. of fresh or canned tomatoes,
1 bay leaf,
1 tsp. chopped parsley,
1 small onion,
1 tsp. sugar,
1 spk. soda,
3 c. milk,
4½ tbsp. flour,
4½ tbsp. butter,
1 tsp. salt,
¼ tsp. pepper.

SALAD.

A salad means a cold food of meat, eggs, cheese, fish, cooked and raw vegetables, or fruit combined with a dressing containing oil, butter or cream, and may be served upon any occasion.

There are three kinds of dressing—French. Cooked, Mayonnaise.

RULES FOR A PERFECT SALAD.

1. Have all ingredients cold.
2. Have greens in it crisp.
3. Have it well seasoned.
4. Have ingredients in dressing properly proportioned and well blended.
5. Have salad attractively garnished.

GENERAL DIRECTIONS.

1. Have meat free from bone, gristle and fat.
2. Cut meat, vegetables, etc., in uniform pieces.
3. Wash lettuce, parsley and watercress in cold water; shake free from water and dry in a towel; put in a cheese cloth or covered bowl and place in a cool place, or let soak for a few hours in cold water.
4. Put the remnants of cooked vegetables into a colander and pour hot water over them to rinse off any butter.

FOOD VALUE.

The food value of green salad is not very high, but the salts its supplies and its refreshing, appetizing qualities make it a most wholesome food. The oil or butter used in dressing it furnishes fat in a digestible form, and when meat, fish or eggs are used served with a cooked or mayonnaise dressing, it contains a great deal of nourishment. It should then be one of the chief foods of a meal. For dinner or a hearty meal serve green or fruit salad.

FRENCH DRESSING.

Stir the seasonings into the oil; add the vinegar and stir vigorously until the dressing thickens. Serve with green salad.

3 tbsp. olive oil,
1 tbsp. vinegar,
½ tsp. salt,
¼ tsp. pepper.

COOKED DRESSING.

Mix all the dry ingredients with egg yolks, slightly beaten. Add the milk, then the hot vinegar, and cook in a double boiler until it thickens, stirring all the time. When done, add the butter, and when melted, turn out to cool.

2 egg yolks or 2 whole eggs,
1 tsp. salt,
1 tsp. mustard,
1 tbsp. sugar,
⅛ tsp. cayenne,
¾ c. milk,
¼ c. vinegar,
2½ tbsp. butter,
1 tbsp. flour.

MAYONNAISE DRESSING.

Break a yolk of an egg into a cold bowl, being careful that no white clings to the yolk. Beat slightly; add seasonings, then the oil, a drop at a time. Beat hard, and, as it thickens, add more rapidly, being careful that the oil in the bowl is thoroughly mixed before adding more. When stiff, add vinegar or lemon juice, a little at a time, and continue beating until all the oil and vinegar are in.

Yolk of 1 or 2 eggs,
1 c. olive oil,
½ tsp. salt,
1 spk. cayenne pepper,
2 tbsp. lemon juice,
Or vinegar.

POTATO SALAD.

Cut cold or freshly boiled potatoes in one-half inch cubes or in slices; mix with seasonings. Pour hot cooked dressing over potatoes and mix lightly with a fork; chill. When ready to serve, arrange in a mound on a bed of lettuce. Garnish with chopped parsley and hard-cooked eggs or radish roses.

4 c. potatoes,
2 tsp. chopped onions,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{4}$ tsp. pepper,
1 bunch parsley, chopped.

COLD SLAW.

Soak the cabbage in cold, salt water for thirty minutes; shred it fine with a sharp knife and mix the dressing with it; serve cold.

$\frac{1}{2}$ of a small head of cabbage,
1 c. hot cooked dressing.

WALDORF, OR CELERY AND APPLE SALAD.

Wash and crisp the lettuce; break the celery into stalks, wash and use the white parts; cut in pieces about one-half inch in length; pare tart apples and cut in cubes; mix together and add a little salad dressing. Arrange lettuce on individual plates; fill with the mixture and on top put a spoonful of the mayonnaise or cooked dressing. If desired, add one-fourth cup chopped pecans or English walnuts.

2 c. celery,
2 c. apple cubes,
1 c. salad-dressing.

STUFFED TOMATO SALAD.

Scald and peel tomatoes, allowing one for each person. Slice off the tops. Take out seeds with a spoon and a little of the pulp and fill the cavities heaping full with celery or cucumber, mixed with mayonnaise or cooked dressing. Make nests of leaves of lettuce and put a tomato in each nest.

8 tomatoes,
2 c. cubed cucumber,
or celery,
1 c. dressing.

CHEESE.

Cheese is made from milk, chiefly the milk of cows, though milk of goats and ewes is sometimes used. The milk is allowed to sour, when it separates into a thick, white substance called *curd* and a light yellow liquid called *whey*. Cheese is made from the curd by subjecting it to different degrees of heat and pressure and by allowing certain bacteria to grow in it and by adding flavoring and coloring materials.

Cheese may be made from skimmed milk, *i. e.*, the hard, cheap cheese; from whole milk, *i. e.*, the soft dairy cheese and from milk to which extra cream has been added, as the Neufchatel and Waukesha cheeses.

Cheese contains on the average one-third fat, one-third protein and one-third water. Cheese is a highly nutritious food, but is rather difficult of digestion. As it contains no starch, it should be eaten with starchy foods, such as bread and macaroni.

WELSH RAREBIT.

Beat the eggs slightly; add mustard, salt and cayenne. Put the milk and cheese in the upper part of a double boiler, and, when cheese is melted, add butter. Pour this mixture over the eggs, return to double boiler, stir constantly until thick and smooth, then pour over slices of toast and serve at once.

$\frac{1}{2}$ lb. cheese, grated,
 $\frac{1}{2}$ c. milk or cream,
1 tsp. mustard,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{2}$ tsp. cayenne,
2 eggs,
1 tbbsp. butter.

CHEESE SOUFFLE.

Put the butter into a saucepan and, when hot, remove from fire; add flour and stir until smooth; add hot milk and seasoning. Return to fire and cook two minutes; remove to back of stove and add the well-beaten yolks and cheese. Set away to cool. Add the whites of egg beaten stiff; turn into a buttered mould; bake in a moderate oven until brown—about 30 minutes. Serve the moment it comes from the oven.

3 tbsp. butter,
3 tbsp. flour,
 $\frac{3}{4}$ c. milk,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{2}$ tsp. cayenne,
1 c. cheese, grated,
3 eggs.

CHEESE STRAWS.

Cream the butter; add flour, crumbs and cheese, then add seasoning, mix thoroughly and add milk. Roll out one-quarter inch thick, cut one-quarter inch wide and six inches long; bake until brown in moderately hot oven.

1 tbsp. butter,
2-3 c. flour,
1 c. bread crumbs,
1 c. cheese grated,
 $\frac{1}{4}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper or paprika,
2 tbsp. milk.

MACARONI.

Macaroni, spaghetti, vermicelli and other Italian pastes are made from the glutinous flour of hard wheat. The flour is made into a stiff paste with hot water, and is then placed in an iron cylinder, the end of which is closed by a disk pierced with holes. A piston forces the paste out through these threads, rods or tubes, according to the shape of the openings. When dry, the threads form vermicelli (Italian for little worms); the rods, spaghetti (Italian for cord,) and the tubes, macaroni (Italian for crushed.) Italian macaroni is dried by hanging over wooden rods in the open air or in ovens; American macaroni is laid on flat frames. These pastes absorb about three times their weight in water in cooking. They are so rich in gluten that they are almost equal to meat as a food, especially if cooked with cheese.

BOILED MACARONI.

Cook macaroni in the boiling, salted water 20 to 30 minutes or until soft; turn it into a strainer; pour over it a cup of cold water to prevent pieces from clinging together; reheat and serve hot, with butter, salt and pepper, or in a white sauce. Grated cheese may be added to the sauce, chopped egg or ham.

1 c. macaroni, broken in
inch pieces,
2 qts. boiling water,
1 tbsp. salt.

BAKED MACARONI AND CHEESE.

Boil the macaroni in the water for twenty minutes, or until soft, adding salt when nearly cooked. Drain in a strainer and rinse with cold water. Put a layer of macaroni in a buttered baking dish, sprinkle with cheese; repeat until all the cheese and macaroni have been used; pour the white sauce over the top; cover with buttered crumbs and bake until these are brown. In macaroni recipes spaghetti may be used.

$\frac{3}{4}$ c. macaroni, broken
in 1-inch pieces,
2 qts. boiling water,
1 tbsp. salt,
 $\frac{1}{4}$ to $\frac{1}{2}$ c. grated cheese,
white sauce,
2 tbsp. flour,
 $\frac{1}{2}$ tsp. flour,
1 c. milk,
 $\frac{1}{2}$ tsp. salt,
Buttered crumbs.

SPAGHETTI WITH TOMATO SAUCE.

Hold the sticks of spaghetti in a bunch and dip the ends into boiling, salted water, letting them coil around in the saucepan. The spaghetti may thus be cooked without breaking. Boil for twenty minutes, or until soft; drain, rinse with cold water (to remove starch that might make it sticky), and mix with the tomato sauce.

$\frac{1}{3}$ box spaghetti,
1 tbsp. salt,
2 quarts boiling water,
 $\frac{1}{2}$ c. tomato sauce.

TOMATO SAUCE.

Cook the onion with the tomato five minutes; mix butter and flour together; strain the tomato and add to it the butter and flour. Cook all together until smooth, then add salt and pepper.

1 c. tomato (canned or steamed),
2 tbsp. butter,
2 tbsp. flour,
1 tsp. chopped onion,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper.

EGGS.

The eggs of many birds, both wild and domestic, are used for food.

STRUCTURE.

If an egg is broken it will be found to consist of the shell, the white, the yolk and membranes. The most conspicuous membrane is the one which lines the shell; another thin membrane encloses the yolk. The white of an egg consists of a thick, central portion with a thin, watery portion surrounding it. It has been found that this white is composed of millions of tiny cells filled with clear, sticky and nearly colorless liquid known as albumen. The walls of these cells are very thin membranes, which are ruptured or broken when the egg is beaten, allowing the contents to escape. The shell of the egg is porous and consists almost entirely of carbonate of lime.

The weight of an average-sized egg is about two ounces. Owing to the porous nature of the shell, the water inside evaporates and air enters to take its place, therefore the longer the egg is kept, the lighter it becomes. A fresh egg will sink at once when placed in water; the older the egg the nearer the surface it will float.

Eggs grow steadily poorer the longer they are kept, even if not decidedly spoiled. The spoiling of eggs is due chiefly to the growth within them of bacteria, which may enter the shell either from the place where the egg has been lying or by means of the air which goes through the porous shell as the water evaporates.

PRESERVATION.

Eggs may be preserved for several months or a year by any method which excludes the air. This is done by packing eggs in bran, oats, sawdust, salt, etc.; by coating the surface with vaseline, paraffine or other substances, or by covering them with lime water. They are also preserved by "cold storage," being kept at a temperature just above the freezing point.

NUTRITIVE VALUE.

Since in all cases the egg is designed to furnish the sole source of nutriment for the growth of the young bird or other animal to be developed within it, it is evident that the egg must contain all the elements required for the purpose; hence eggs are called one of the perfect foods. They are as nutritious as meat and fish, but, taken alone, are a too concentrated food.

COMPOSITION.

The egg consists practically of these substances; protein, fat, water, and mineral matter, the average composition of the edible portion of hens' eggs being as follows:

	Per cent.
Water	73.7
Protein	14.8
Fat	10.5
Mineral matter	1.0

The nutritive materials of eggs being principally protein and fat, they resemble in this respect such animal foods as milk, cheese and meat. Their lack of carbohydrates explains the combination of eggs with food materials containing them, as flour, sugar, etc.

The white of eggs contains albumen in the purest form in which it occurs in nature, and so is taken as the type of albuminous foods. Albumen contains nitrogen, the element essential to tissue-building.

EXPERIMENTS.

No. I. Effect of cold water on albumen?

No. II. Effects of acid on albumen?

No. III. Effect of heat on albumen?

Fill out the following diagram:

TEMP.	APPEARANCE	DIGESTIBILITY
Raw		
150° F.		
185° F.		
212° F.		

EXPERIMENTS TO FIND OUT THE BEST TEMPERATURE FOR COOKING EGGS.

No. I. Cook an egg in boiling water three minutes.

No. II. Put an egg in boiling water; remove from the fire and let stand 8 to 10 minutes.

No. III. Put an egg in cold water, bring to boiling point. Give results.

SELECTING AND TESTING EGGS.

1. Fresh eggs should have a thick, rough shell and feel heavy.
2. Hold an egg between the eye and the light. If clear, it is fresh.
3. Drop an egg in cold water. If it sinks, it is fresh.
4. Shake the egg near your ear. If the contents rattle, it is somewhat stale.

Eggs should be kept in a cool, dry place. The shells should be washed before the eggs are used. When using several eggs, break each one separately into a cup. In this way a poor egg may be detected. To keep an egg from drying after it is removed from the shell, mix with it a teaspoonful of water; cover, and keep in a cool place. Whole yolks may be covered with cold water and then kept in a cool place.

RECIPES—SOFT-COOKED EGGS.

Put into a saucepan enough boiling water to cover the eggs. A general rule is to allow one pint of water for two eggs and an extra cupful for each additional egg. If eggs are very cold, use more boiling water. Place the eggs in the water with a spoon and cover the saucepan; remove at once from the fire to table and let stand 8 to 10 minutes according to size of eggs. Serve in heated cups.

HARD-COOKED EGGS.

Cook in same manner as soft-cooked eggs, placing saucepan on back of stove, where it will keep hot, but not boil, for 30 minutes.

POACHED EGGS.

Prepare a slice of buttered toast for each egg and keep it hot. Have ready a shallow pan containing enough boiling salted water to cover the eggs, allowing 1 tsp. salt to 1 pt. water. Before putting in the eggs place the pan where the water will keep hot, but not boil. Break each egg into a saucer and slip carefully into the water. Cook until the white is firm and a film forms over the top of yolk. Pour water over yolk with a spoon if necessary. Remove eggs from the water with a skimmer or griddle-cake turner; drain; trim off rough edges and place each egg on a slice of toast. Add salt, pepper and butter to taste. Buttered muffin rings or egg poachers are often used to keep in shape. If a scum forms on water, remove it before eggs are put in.

STUFFED EGGS.

Cook six eggs 30 minutes; remove the shells and cut crosswise; remove the yolks and mash; add butter, salt, pepper and mustard. When smooth, add enough vinegar to make a paste. Fill the whites with the mixture. Smooth the top. Arrange each half on a bed of fine parsley or lettuce. If liked, add half the quantity of potted ham or deviled ham or tongue.

6 eggs,
1 tsp. butter,
 $\frac{1}{4}$ tsp. mustard,
 $\frac{1}{4}$ tsp. pepper,
 $\frac{1}{4}$ tsp. salt.

BEATING EGGS.

Beating entangles much air in fine bubbles in the albumen. Beat yolks in a bowl with a fork or Dover beater until light colored and thick. Beat whites on a platter with fork or wire beater or in a bowl with a beater. Eggs are beaten slightly when whites and yolks are well mixed. Whites are beaten stiff when they are thick and can be cut with a knife; they are dry and flaky.

FOAMY OMELET.

Separate yolks from whites. Beat the yolks until thick; add salt, pepper and milk. Beat whites until dry; cut and fold them into the first mixture. Butter the sides and bottom of a hot omelet pan; turn in the mixture, spread evenly. Cook slowly until well puffed up and a delicate brown underneath; place the pan on the grate of the oven to cook the top. The omelet is cooked if firm and dry when touched by the finger.

Fold over, turn on a hot platter and serve immediately. If desired pour one cup thin white sauce around the omelet.

SPANISH OMELET.

Beat eggs slightly, add salt, pepper and milk. Put butter into a hot omelet pan; when melted, pour in the mixture. As it cooks, prick with a fork to let the uncooked part run underneath. When creamy and brown on the bottom, fold and turn onto a hot platter. Serve with tomato sauce.

4 eggs,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper,
4 tbsp. milk or water,
1 tbsp. butter.

TOMATO SAUCE.

Melt the butter, add chopped onion and pepper; cook until onion is light yellow; add the tomato and simmer until moisture has nearly evaporated. Add salt and cayenne.

4 eggs,
4 tbsp. milk,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper,
2 tbsp. butter,

2 tbsp. butter,
2 tbsp. minced onion,
Small piece red or green
pepper,
1 bay leaf,
 $\frac{1}{4}$ c. tomato,
 $\frac{1}{4}$ tsp. salt,
f. g. cayenne pepper.

SCRAMBLED EGGS.

Beat eggs slightly, add salt, pepper and milk. Put the butter into a hot, smooth omelet pan; when melted pour in the mixture. Cook until of a creamy consistency, stirring from the bottom of the pan as it thickens. Serve on slice of hot, buttered toast.

5 eggs,
 $\frac{1}{2}$ c. milk,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper,
2 tbsp. butter.

EGGS A LA GOLDEN ROD.

Cook the eggs thirty minutes. Make a white sauce. Separate the yolks and whites of the eggs. Chop the whites and add to the sauce. Arrange four slices of toast on a platter, pour sauce over it. Rub the yolks through a strainer or vegetable press over the top. Cut the remaining slices of toast into points. Garnish with toast points and parsley. Serve four persons.

3 hard cooked eggs,
1 c. thin white sauce.

White sauce:

1 c. milk,
1 tbsp. butter,
1 tbsp. flour,
 $\frac{1}{2}$ tsp. salt,
 $\frac{1}{8}$ tsp. pepper,
5 slices toast.

EGGS AND MILK.

For custards, be sure that the eggs and milk are perfectly fresh.

CUP CUSTARD.

Mix eggs slightly and stir in the sugar and salt, then slowly the hot milk. When sugar has dissolved, pour into cups (about six) and grate a little nutmeg over each custard. Set the cups in a pan of hot water, and bake in a moderate oven till a pointed knife inserted in custard comes out clean. Do not let the water in the pan boil. Serve plain or with caramel sauce.

1 qt. scalded milk,
4 to 6 eggs,
 $\frac{1}{2}$ c. sugar,
 $\frac{1}{4}$ tsp. salt,
Nutmeg.

CARAMEL SAUCE.

Melt the sugar to a syrup of light brown color, add water. Simmer ten minutes. Cool before serving.

$\frac{1}{2}$ c. sugar,
 $\frac{1}{2}$ c. boiling water.

SOFT CUSTARD.

Heat milk in double boiler. Mix egg yolks with sugar and salt. Pour hot milk over the mixture till the egg is all removed from the side of the bowl. Return to double boiler, and cook till custard coats the spoon, stirring constantly. Strain, and, when cool, flavor. If the custard curdles, pour into cool dish and beat vigorously with a Dover egg beater. If desired, the whites of the eggs may be beaten stiff, poached in hot water and served on top of custard.

2 c. milk,
3 egg yolks,
 $\frac{1}{4}$ c. sugar,
 $\frac{1}{8}$ tsp. salt,
 $\frac{1}{2}$ tsp. vanilla.

GOLD AND SILVER CUSTARD.

Make a cup custard, using the whites of eight eggs. Use yolks for a soft custard. Turn out cup custards, then cool and pour soft custard around them.

TAPIOCA CREAM.

Soak tapioca in enough water to cover, in double boiler. When the water is absorbed add the milk and cook until transparent. Beat sugar and salt into yolks of eggs and pour the hot tapioca over the mixture, stirring well. Return to double boiler quickly, and cook two or three minutes. Remove from fire, add vanilla and fold in the stiffly beaten whites of eggs. Serve cold.

4 tbsp. pearl tapioca.
or 2 tbsp. minute tapioca,
1 pt. milk,
2 eggs,
 $\frac{1}{3}$ c. sugar,
 $\frac{1}{4}$ tbsp. vanilla.

SUGAR.

Sugar is made for common use from sugar cane, sugar beets and maple sap. This sugar is called *sucrose*. Honey is the purest natural form of sugar.

Glucose, or *grape sugar* is found in honey, fresh fruits and on the skin of dried fruits, such as raisins, dates, etc. It is also made for commercial purposes from the starch of corn by boiling it with an acid.

The sugar of milk is called *lactose*.

Sugar made from sugar cane and sugar beets is the kind most commonly used. The products of sugar cane are molasses, brown sugar, granulated, cut loaf, powdered and confectioner's sugar.

Only white sugar is made from beets.

Sugar is very easily digested, as it dissolves so readily. It is very necessary food when taken in small quantities. It produces heat and energy in the body; children, being more active than grown people, naturally crave more sweets.

EVIL EFFECTS OF SUGAR.

If sugar in any form is left on the teeth, it will ferment and cause them to decay.

If too much of it is eaten at one time, part of it will ferment in the stomach and interfere with the digestion of other food.

EFFECTS OF HEAT ON SUGAR.

Experiment.—Heat a little sugar in a test tube. Notice the change. What forms on the side of the tube? Place a lighted match at the top, what is burning and what is the color of the flame? What is left in the tube? Sugar is heated to different degrees for different kinds of candy.

SOFT BALL.

When a little dropped in cold water, can be rolled into a soft ball.

THREAD.

When a little dropped from a spoon, spins into fine thread.

HARD BALL.

When dropped into cold water, it becomes hard.

THE CRACK.

When tried in cold water it becomes brittle.

FUDGE.

Boil sugar, chocolate (or cocoa) and milk together until it reaches the soft ball stage. Remove from the fire and add butter and flavoring. Beat till creamy and thickened. Pour quickly into a greased pan. When firm, cut in squares.

2 c. sugar,
1 c. milk,
2 tbsp. butter,
1 tsp. vanilla,
¼ 2-oz. cake of bitter
chocolate,
Or 4 tsp. cocoa.

PENOCHE.

Boil sugar and milk to the soft ball stage. Remove from the fire, add butter, flavoring and nuts. Beat till creamy and thickened; pour into a greased tin, and when firm, cut in squares.

2 c. brown sugar,
¾ c. milk,
2 tbsp. butter,
1 tsp. vanilla,
1 c. chopped nuts.

PEANUT BRITTLE.

Break peanuts in pieces, or chop them. Line a greased pan with the nuts. Put sugar into a sauce pan, and heat till it becomes a thin, light brown syrup, stirring constantly. Pour over peanuts, and mark in squares. When cool, break in pieces.

2 c. sugar,
½ to 1 c. shelled peanuts.

MOLASSES CANDY.

Boil until it is brittle when tried in cold water. Pour in a buttered pan. When cool, pull until light colored.

2 c. molasses,
1 tbsp. vinegar,
⅛ tsp. soda.

COOKED FONDANT.

Boil all together until it makes a soft ball when tried in cold water. Turn out on a large platter, and when cool work it with a spatula and the hands until creamy. Divide into portions and flavor to taste. Shape into chocolate creams, cream dates, nut creams and bon-bons.

2 c. sugar (fine granulated),
¾ c. cold water,
⅛ tsp. cream tartar.

CARAMEL SAUCE.

Note.—Sugar becomes, at 365 deg. F. a clear, colorless liquid, *barley sugar*. At 420 deg., the sugar turns brown. It is now *caramel*.

Melt sugar to a syrup of light brown color, add water. Simmer ten minutes. Cool before serving.

½ c. sugar,
½ c. boiling water.

GLACE NUTS.

Put ingredients in a saucepan, stir and heat to the boiling point. Boil without stirring until the syrup reaches the crack, 310 deg. F. Remove any granulations of sugar from sides of saucepan. Remove saucepan from the fire and place instantly in a large pan of cold water to stop boiling. Remove from the cold water and place in a pan of hot water during dipping: Take nuts separately on a long pin, dip in syrup to cover, remove from syrup and place on oiled paper. If syrup begins to crystallize, set back on stove until it just comes to a boil.

2 c. sugar,
1 c. boiling water,
1 tsp. cream tartar.

MEAT.

Meat is the flesh of animals used for food.

1. Domestic animals.
2. Game.
3. Poultry.

1. Domestic animals means the flesh of cattle, sheep, swine, called in mature animals, beef, mutton, pork, while in the young animals the calf is called veal, lamb is called lamb.

2. Game is the flesh of wild animals and birds.

3. Poultry is the flesh of barnyard fowls.

The flesh of mature animals is more nutritious and more easily digested than that of the young.

Beef is the most nutritious meat; mutton ranks next; pork is nutritious, but difficult to digest; lamb is tender, but is not as valuable as mutton; veal is the least nutritious and is difficult to digest; it is liked for its flavor and to give variety.

Good Meat is firm, elastic and a bright, uniform color when first cut; the fat is firm, and light straw color or a pale yellow. Lean meat is muscle. Much used muscle absorbs much food material, making rich, juicy meat, but not always of tender fibre. (Why)?

STRUCTURE OF MEAT.

Muscle, tissue, fat, bone, tendon, juice and skin

COMPOSITION.

Mineral salts.
Water.
Proteid.
Fat.

BONE.

Experiment 1. Soak a piece of bone in vinegar several days. What change takes place in bone? What does the acid take out?

Experiment 2. Lay a piece of bone on a hot fire. What change takes place? What part burns away?

Bone is the hardest animal tissue; it is about one-half water, one-third mineral substance, and one-sixth animal matter, mostly gelatine.

LEAN MEAT.

Experiment 1. Examine carefully a small piece of lean beef. Scrape with a knife until only fibre is left. What do you see?

Experiment 2. Cut a piece of beef into small bits, cover with cold water. What happens?

Experiment 3. Sprinkle a piece of meat with salt. What happens?

Experiment 4. Heat some of the juice of meat in a tube. Compare with white of egg.

Experiment 5. Pour boiling water over a small piece of meat. Why does not the water become red?

Which would you use for soup, boiling or cold water?

All muscular tissue is made up of bundles of tube-shaped cells filled with juice. These tubes are bound together by a web of white connective

tissue threaded by tiny blood vessels and streaks of fat. The more connective tissue, the tougher the meat. The contents of the muscle fibre or tubes consist of a jelly-like substance composed of muscle proteid or myosin, combined with water containing albumen, mineral matter and the substances which give flavor and color to the meat. These substances and the albumen dissolved in the liquid between and around the fibres form the juice of the meat.

COOKING OF MEAT.

Meat is cooked to improve the flavor and appearance, also to kill germs of other organisms which may be present, and to soften fibre and connective tissue. It is prepared so as to *extract* the juice as in soups, broths and beef tea, to retain the juice as in broiling, roasting, boiling and frying; or it may be a combination of both methods, as in stews, where part of the juice is retained in the meat and part drawn out to enrich the gravy.

BOTTLED BEEF TEA.

Wipe the meat with a damp cloth; cut off all the fat and bone and membrane. Cut the meat into small pieces, put in a quart glass jar; add the salt and cold water. Set in a cold place for one hour. Place the jar on a trivet in a kettle of cold water, having the water reach nearly to the top of the jar. Heat the water to the simmering point. Keep at this temperature about two hours. Strain through a coarse strainer into a hot cup, season with a little pepper and more salt to taste. Serve immediately.

1 lb. round steak,
½ tsp salt,
1 pint cold water.

CUTS OF MEAT.

Loins.—Best quality for roasts and steaks.

Rump, Tough.—Pot roast and steaks.

Round.—Fair steak, beef tea, beef loaf.

Top Sirloin.—Fair steak and pot roast.

Prime Ribs (six ribs.)—Fine roast.

Blade (three ribs.)—Fair roast.

Chuck (four ribs.)—Pot roast and stew.

Neck.—Stews and soups.

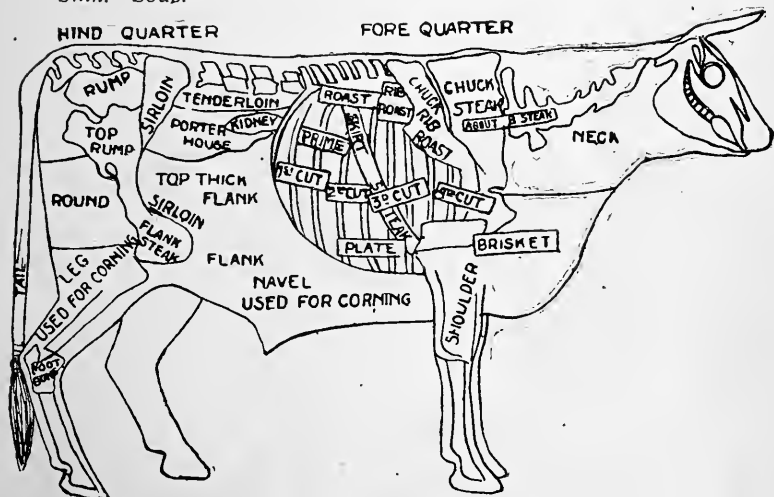
Brisket.—Corned and boiled.

Navel.—Corned and boiled.

Flank.—Steaks, boiled, stew.

Shoulder.—Soup.

Shin.—Soup.



SOUPS.

Soup stock is the basis of all meat soups. It consists of the soluble parts of the meat, vegetables and bone, dissolved in water. Soups are divided into two classes, soups with stock; soups without stock.

Soup is generally an economic food, since a soup, tempting and nutritious, can be made of the cheapest materials, including remnants of food unfit for other use.

Clear soup is easily assimilated, acting as a stimulant rather than as a nutrient.

When meat for soup comes from the market, remove from the brown paper, and wipe it all over with a clean damp cloth. Cut the lean meat into small pieces; by so doing a large amount of surface is exposed to the water, and juices are more easily drawn out. Put bone, meat and fat into a clean soup kettle, and add as many quarts of cold water as there are pounds of meat and bone. Let stand one hour, that the cold water may draw juices from the meat. Heat gradually to the boiling point, then lower the heat and cook slowly from six to seven hours. A scum will rise on the top which contains coagulated albuminous juices. These give the soup its chief nutritive value and should not be removed. Vegetables and spices should be added the last hour of cooking.

A knuckle of veal is often added, which gives the stock when cold a jelly-like consistency. Some of the fat is absorbed; the remainder rises to the top and forms, when cold, an air-tight covering over the stock, and should not be removed until stock is done. From the stock may be made macaroni, noodle, vegetable or tapioca soups, by adding, just before serving, the boiled vegetables indicated by the name.

HINTS ABOUT SOUP MAKING.

1. Have all trimmings sent home with the meat.
2. Either kitchen bouquet or caramel is used, to darken soup.
3. The kettle should be closely covered to keep in the steam and the savory odors.
4. Stock made without vegetables keeps best in hot weather.
5. It is best to use the stock the day after it is made.
6. Stock used instead of water in meat gravies makes them richer.
7. At its best soup only contains about 5% of nutritious material.
8. The soup meat may be used, adding to it seasonings, such as parsley, onions, etc.

MEAT SOUP STOCK.

Brown one-third of meat in hot frying pan, in marrow from bone; put remaining two-thirds with bone and fat in soup kettle; add water; let stand for thirty minutes; place on back of range; add browned meat and heat to boiling point. Cook slowly keeping below boiling point during cooking; add vegetables and seasonings: cook one hour; strain and cool as quickly as possible.

6 lbs. shin of beef,
6 qts. cold water,
 $\frac{1}{2}$ tsp. pepper corns,
6 cloves,
1 bay leaf,
2 sprigs parsley,
carrots,
turnips,
onions,
celery,
 $\frac{1}{2}$ c. each cut in dice,
1 tbsp. salt.

VEGETABLE SOUP.

Wash and scrape the carrot; pare the turnip and cook in boiling water $\frac{3}{4}$ hr., or until tender; drain and add to the boiling stock; season.

2 c. stock,
1 tbsp. carrot cut into
 $\frac{1}{2}$ -inch dice,
1 tbsp. turnip cut into
 $\frac{1}{2}$ -inch dice,
 $\frac{1}{4}$ tsp. salt,
spk. pepper.

CLEAR SOUP.

Clearing soup is a wasteful process, but it is sometimes desirable. When stock is thoroughly cold skim off every particle of fat, add slightly beaten white of egg and crushed egg shell. Allow one egg to one quart of stock. Place on the fire and stir until it boils. Boil five minutes or until it breaks free from scum; simmer gently fifteen minutes, add tiny piece of

ice or a little cold water; remove carefully from fire and pour through a wet cloth into bowl. If not clear, strain again. Add flavoring, reheat and serve.

COOKING OF TOUGH MEATS.

Meat, to be wholesome, must come from a healthy animal; to be nutritious, from a well-nourished one. Much-used muscles absorb much food materials, making rich juicy meat. This is, however, tougher than that of parts less used, because the connective tissue and fibre which makes meat tough, increase as well as the contents of the muscle tubes.

Exercise also draws a large quantity of blood to the muscle, consequently tough muscle contains more juice than other muscles. Tough cuts of meat are inexpensive, and if properly cooked so as to render the connective tissues digestible, have as high, if not higher, food value than the tender cuts.

Two facts important to bear in mind in cooking meats are: (1) Heat, by causing the collagen in the connective tissue to swell, tends to force the juices out of the muscle fibres. (2) Dry heat hardens connective tissue. In order to soften and dissolve the connective tissue, tough meats must be cooked in moist heat. There are three ways of doing this, stewing, boiling and braising.

In the *boiling* process the meat is plunged into boiling water and cooked at this temperature 10 or 15 minutes. Then simmer until the meat is tender. By this means much of the juice and flavor is kept in the meat.

Braising is the cooking of meat with a small amount of water, in the oven in a tightly covered pan. Cuts not tender enough for roasting, but of a better quality than those used for stews, are cooked in this way.

Stewing is cooking for a long time in water below the boiling point. The purpose of stewing meat is to keep part of the juice in the meat and to extract part to flavor the gravy. Some of the meat is put on in cold water and the remainder is browned in the frying pan before adding. Meat for stews should contain some bone and fat. The bone makes the stew gelatinous and the fat gives the desired richness. Various vegetables are used in stews to give flavor and thickening and different herbs and spices to season them. By far the best way to cook stews is in the double boiler; then one can be sure that the temperature never reaches the boiling point.

BEEF STEW.

Remove the fat and cut the meat into 1-inch pieces; put aside $\frac{1}{2}$ cup of the best pieces of meat. Put the rest of the meat and bone into cold water and soak for 1 hour; then heat until it bubbles; season $\frac{1}{2}$ c. of meat and roll it in flour. Melt the fat in a frying pan; remove the scraps, brown the sliced onion and then the floured meat in the hot fat; add both to the stew and cook for two hours at the simmering point; add the vegetables and flour which has been mixed with $\frac{1}{2}$ cup cold water, and cook 1 hour, or until the meat and vegetables are tender; remove the bone; season with salt and pepper and serve.

2 lbs. beef from the leg,
1 onion sliced, -
 $\frac{1}{2}$ c. carrots diced,
 $\frac{1}{2}$ c. turnips diced,
4 potatoes cut in $\frac{1}{2}$ -inch
slices,
1 tsp. salt,
 $\frac{1}{4}$ tsp. pepper,
2 tbsp. flour,
4 c. water.

SCOTCH BROTH.

Remove the fat and bone and cut the meat into 1-inch pieces; soak in 2 quarts cold water for one hour then bring quickly to the boiling point. Drain the barley which has been soaked in cold water over night and add to the broth. Cook 2 hours at the simmering point. While the meat is soaking soak the bones in another quart of water for 1 hour; then heat slowly and boil for 2 hours. Strain and add liquid to the broth. Add the vegetables and cook until tender; add seasonings and chopped parsley just before serving.

3 lbs. neck of mutton,
3 qts. water,
 $\frac{1}{4}$ c. pearl barley,
 $\frac{1}{4}$ c. carrot,
 $\frac{1}{4}$ c. celery,
 $\frac{1}{4}$ tsp. pepper,
1 tsp. chopped onion,
1 tbsp. pepper,
2 tbsp. flour,
1 tbsp. salt,
1 tbsp. minced parsley.

BEEF LOAF.

Mix all the ingredients together. Shape into a loaf and place in a baking pan. Dredge with flour, salt and pepper; put bits of butter on top; place in hot oven, and when meat is brown, cover bottom of pan with hot water. Baste every fifteen minutes. Bake large loaf one hour; small one, half hour.

2 lbs. round steak,
ground,
1 c. crumbs,
1 tsp. salt,
¼ tsp. pepper,
sage or chopped corn,
1 beaten egg,
tomato if desired.

BOILED HAM OR TONGUE.

Put into cold water and heat gradually until the water bubbles. Cook at the simmering point until tender. Remove from the fire and allow it to stand in the water in which it was cooked for one hour. Take it out and draw off the skin. It may be served cold. A ham may be covered with fine bread crumbs and 2 tbsp. of sugar, then placed in the oven one-half hour to brown.

TENDER MEATS.

Broiling is cooking by direct exposure to heat over red-hot coals or to the flame in the broiling oven of a gas range.

In broiling, the object is to retain the juice of meat. It should be exposed to great heat long enough to coagulate the albumen and shrink the fibres on the surface, thus forming a coating which will keep the juice inside. As broiling is a quick process of cooking, only tender portions of certain meats should be broiled. Tender portions of beef, mutton and lamb and also bacon, very young chickens, small fish, lobsters and oysters may be broiled. *Pork* and *veal* should *not* be broiled, as they need thorough cooking.

BROILED STEAK.

Heat the broiler and grease it to keep meat from sticking; remove extra fat and wipe the meat with a damp cloth; place in broiler and place near the fire or flame; count ten and turn. Repeat until both sides are brown, then move broiler further from the fire or lower the flame until meat is cooked. Place on hot platter; season with pepper and salt and serve at once.

PAN-BROILED CHOPS.

Heat frying pan very hot; trim the chops; remove fat and wipe with damp cloth; put chops in frying pan. When one side is seared, turn and sear the other; then cook the inside more slowly. Turn the chops frequently, but do not pierce them with a fork while turning. Cook from six to ten minutes, according to thickness of chop. Season with salt and pepper; arrange on hot dish and serve at once.

ROASTING.

General Directions.—Wipe meat; trim and skewer into shape; dredge all meats except beef with salt, pepper and flour. Beef roasts may be seared in hot pan on top of stove; then place roast on rack in pan in hot oven. When meat is brown, cover bottom of pan with water and reduce the heat and cook more slowly. Beef and mutton require from 12 to 18 minutes per lb.; veal and pork, require from 20 to 30 minutes per lb.

WARMED-OVER MEATS (RECHAUFFES.)

Delicious meat dishes may be prepared from remnants of cooked meat. Learn to combine the materials on hand, varying the regular recipes.

To Prepare.—Remove all bone and gristle and for hash trim off the fat. Save all bones for soup stock; save all fat for frying out. Cut meat in half-inch cubes or chop fine. If meat is tender and well cooked, reheat only; if it is tough or underdone, simmer until tender, saving the cooking water to make a sauce. Season rather highly, as much of the flavor is lost in the cooling. Do not cook meat long the second time, as in so doing it is rendered indigestible.

HASH.

If using uncooked potatoes, cut fine; cook in boiling water to cover until tender; add potatoes and seasonings. If using boiled potatoes, add other ingredients and heat. Parsley may be chopped and added if desired. To brown, add two tbsp. milk; cook, unstirred, and fold like omelet.

CORNED BEEF HASH.

Chop the meat moderately fine; push it to one side of the tray; chop the potatoes and mix them with the meat; season and heat over hot water or in frying pan over moderate heat.

MINCED MEAT ON TOAST.

Chop beef, ham or any cold meat fine; season; warm in gravy sufficient to moisten; spread on slices of crisp toast dipped in salted hot water.

MEAT SOUFFLE.

Make the white sauce, and while hot add meat and seasonings and yolks of eggs beaten light and set away to cool. When wanted, beat whites of eggs very stiff; add them to the meat; put all in a buttered dish and bake twenty minutes. Serve immediately or it will fall.

SALT MEATS.

CORNED BEEF.

Wash quickly in cold water. Beef that is very salty should be soaked in cold water; if only slightly salted, use boiling water that the goodness may be kept in the meat. Cover with boiling water and skim carefully when it begins to boil. Cook slowly, simmering, not boiling, until so tender that you can pick to pieces with a fork. Let the water boil away toward the last, and let the beef stand in the water, uncovered, until partially cool.

FRIZZLED BEEF.

Have the beef cut in fine shavings; pour the boiling water over it and let it stand 10 minutes; drain and cook it in 2 tbsp. of butter to curl or frizzle it. Melt the remaining two tbsp. of butter in a saucepan; add the flour and pepper, stir until smooth, then add the milk slowly. Let it boil up once and pour it over the well-beaten egg. Add the beef; reheat and serve at once.

CREAMED COD FISH.

Pick the fish into small pieces and let it stand covered with fresh water on the back of the stove until softened. Drain; melt the butter, add the flour and pepper and stir until smooth; then add the milk slowly. Let it boil up once, add the egg, slightly beaten; add the fish, reheat and serve on toast.

2 c. chopped, cooked meat,
2 c. finely cut potatoes,
1 tbsp. butter,
1 tbsp. flour,
1 tbsp. drippings,
 $\frac{1}{4}$ small onion,
1 c. water,
 $\frac{1}{2}$ tsp. salt.

1 c. corned beef (about $\frac{1}{2}$ fat),
2 c. boiled potatoes,
Few drops of onion juice,
A very little pepper.

2 c. cooked meat chopped very fine,
1 qt. milk,
2 tbsp. butter,
4 tbsp. flour,
1 tsp. salt,
 $\frac{1}{8}$ tsp. pepper,
1 tbsp. parsley, chopped,
1 tbsp. lemon juice,
1 spk. nutmeg,
1 spk. cayenne,
2 eggs.

$\frac{1}{4}$ lb. dried beef,
1 c. milk,
4 tbsp. butter,
2 tbsp. flour,
Spk. pepper,
1 egg.

1 c. salt cod fish,
1 c. milk,
2 tbsp. butter,
2 tbsp. flour,
Spk. pepper,
1 egg.

FISH.

In fish we have a food similar in general character to meat, yet different from it in some ways. As ordinarily used, the term fish includes, besides the back-boned fish, many other forms of sea food, such as

oysters, clams and other mollusks, lobsters, shrimps, crabs, terrapin and turtle. Fish proper are distinguished from shell fish by being *vetebrate*. They are divided into two great classes—fresh water fish and salt water fish, and these are sub-divided into the white meat fish, or those having fat only in the liver, such as red snapper, and the dark meat fish, or those having fat distributed over the body, such as salmon or mackerel.

FOOD VALUE AND DIGESTIBILITY OF FISH.

The food value and digestibility of fish is very similar to that of lean meat. As it is less stimulating, it is especially suited to the needs of brain workers, who take little exercise. It is more desirable as a means of varying the diet than as a staple of food, although it is the proteid food in many coast towns where sea food is cheap and meat hard to obtain. Fish kept too long is watery when cooked. Fish may be prepared in a number of ways, such as steaming, broiling, frying, baking and boiling, and should be served with some food containing starch or fat, as it is lacking in these principles.

SELECTING FISH.

The flesh should be firm, the eyes bright and the gills bright red. Fish brought far inland should be dressed before being shipped.

CLEANING FISH.

Rest the fish on the back and cut on the under side, so as to expose the entire body cavity. Remove all the internal organs, being careful not to break the gall sac. The kidneys, lying directly under the back bone, should be scraped away. Wash quickly, dry with clean towel, and, if the fish is not to be used at once, sprinkle with a little salt and put away in a cold place.

BAKED FISH.

Fish suitable for baking whole are cod, haddock, cusk, bluefish, small salmon, bass, shad, whitefish.

After the fish has been cleaned remove the eyes and fill the body cavity with the dressing allowing room for it to swell slightly. Sew up the fish using strong thread, skewer and tie in the shape of the letter S. Butter and dredge with flour, place on a rack or fish sheet in a baking pan. If the fish is very dry, cut gashes in it crosswise and insert strips of salt pork. Bake the fish in a moderate oven until the flesh is brown and may be pierced without the juice running out; remove the strings and skewers, garnish with lemon and parsley and serve.

DRESSING FOR BAKED FISH.

Mix all together and add enough boiling water to bind the crumbs together.

	1 c. cracker crumbs,
	1 tsp. chopped pickle,
	1 tsp. capers,
	1 tsp. chopped parsley,
	1 egg,
	¼ tsp. salt,
	½ tbsp. melted butter,
	1 tsp. scraped onion.

STEAMED FISH.

Skin and cut the meat from the bone, cutting the meat as close to the bone as possible. Butter a plate, lay on the fish, cover with another plate and steam over hot water from 20 minutes to ½ hour. This may be cooked in the oven in the same manner.

BROILED FISH.

Fish suitable for broiling: *split*—mackerel, young cod, blue fish, white fish, shad, trout, etc. *Sliced*—halibut and salmon. *Whole*—smelts, perch and other small fish.

Remove the head and tail and split the fish down the back. Use a close-barred, double wire broiler. Grease it when hot with salt pork rind. Wipe the fish dry, sprinkle with salt and pepper, and if not oily, rub it

with melted butter. Broil split fish flesh side to the heat until brown, then broil the other side till the skin is crisp. Broil small fish close to the heat, turning occasionally. Turn slices of fish often. When cooked, carefully loosen from the broiler and slip off on to a hot platter. Spread with butter, salt and pepper; use fish sauce; garnish with parsley and slices of lemon; serve.

DRAWN BUTTER SAUCE.

Mix flour, salt and pepper with one-half the butter; pour on the water and stir over the fire until the sauce boils. Add the rest of the butter in bits, stirring until it is absorbed. Serve on fish.

3 tbsp. flour,
1½ c. water,
½ tsp. salt,
f. g. pepper.

HOT TARTARE SAUCE.

Mix the vinegar, lemon juice, salt and sauce, and heat over hot water; brown the butter and add very slowly to this mixture; keep warm, but do not boil; serve with broiled fish.

⅓ c. butter,
1 tbsp. vinegar,
1 tsp. lemon juice,
¼ tsp. salt,
1 tbsp. Worcestershire
sauce.

HOLLANDAISE SAUCE.

Cream the butter; add the yolks of the eggs and beat well together; then add the lemon juice, salt, paprica and hot water slowly to the yolks and butter. Cook in double boiler, stirring constantly, until the sauce becomes like thick cream. When done, remove from the fire and stir and beat with a Dover egg beater about five minutes. Serve with fish hot or cold.

½ c. butter,
yolks of 4 eggs,
juice of ½ lemon,
½ tsp. salt,
¼ tsp. paprica,
1 c. hot water.

FRIED FISH.

Large fish may be boned and cut into slices. Small fish, like smelts, may be cooked whole. Season with salt and pepper and cover with corn meal, flour or crumbs and egg. Cook in deep, hot fat; drain on paper. Serve on a hot dish; garnish.

OYSTERS.

Oysters, clams, mussels and scallops or salt water shell fish belonging to the family of mollusks, or soft bodied animals. Oysters are in season from September to May. They must, under all circumstances, be fresh when used; when stale they are poisonous.

TO CLEAN.

Put in a wire strainer or colander; drain, saving the liquor if it is to be used; then pour one-half cupful of cold water over one quart of oysters; more water will wash away the flavor. With the fingers examine the gills to see that no bits of shell are left clinging to them.

COMPOSITION.

Oysters have about the same composition as milk, containing carbohydrate matter which most flesh foods lack. They are easily digestible, but not cheap, costing about five times as much as milk.

PANNED OYSTERS.

Drain and wash oysters; heat an iron skillet or spider; put in the butter, when hot; carefully drop in the oysters; shake and stir until plump, add salt and pepper and serve on a hot dish.

25 oysters,
2 tbsp. butter,
¼ tsp. salt,
⅛ tsp. pepper.

CREAMED OYSTERS.

Drain and wash oysters; put the liquor and oysters in a stew pan; heat until the gills are curled; drain, saving the liquor. Make the white sauce, add the oyster liquor; stir in the oysters; stand over hot water a few minutes and they are ready for use. This is used for filling paté shells.

STEWED OYSTERS.

Drain and wash oysters; put the strained liquor in a stew pan; heat oysters in it till edges curl; remove the scum; heat milk and add oysters and liquor then the butter and flour rubbed together, then salt and pepper. Serve very hot with oyster crackers.

SCALLOPED OYSTERS.

Mix the crumbs with the salt, pepper and butter; spread one-third of them on the bottom of a buttered baking dish; put in half the oysters, drained and rinsed; another layer of crumbs and the rest of the oysters, covering the top with the remaining crumbs; pour over these the liquid; add a little milk if there is very little liquid. Bake about twenty minutes in an oven hot enough to brown the crumbs in that time.

FRIED OYSTERS.

Drain and wash oysters; dry on cheese-cloth or soft towel; beat egg until mixed, allowing one egg to each dozen oysters; add one tbsp. water to each egg; dip oysters in fine dried bread crumbs, then in beaten egg, then in crumbs. Prepare all the oysters before beginning to fry. Heat fat in a deep pan, until a piece of bread dropped in will brown in twenty seconds; put oysters in a frying basket, six at a time; plunge in the hot lard or suet; fry until brown; drain on soft brown paper.

SCALLOPED DISHES.

SCALLOPED FISH.

Use cooked fish or canned salmon. Flake the fish, removing skin and bone; mix with white sauce and place half in baking dish. Sprinkle with buttered crumbs; pour in rest of fish and cover top with crumbs. Bake in moderate oven about 20 minutes.

SCALLOPED OYSTERS.

Mix crumbs with salt, pepper and butter; spread one-third of them on bottom of baking pan; put in half the oysters drained and rinsed, another layer of crumbs, and the rest of the oysters; cover the top with crumbs; pour over the liquid; bake about 20 minutes in moderately hot oven.

SCALLOPED POTATOES.

Wash and pare potatoes; slice across in thin slices; place half in pan; sprinkle with salt, pepper and butter; fill pan; season; cover with crumbs; pour over it the milk and bake in oven 45 minutes.

25 oysters,
2¼ tbsp. flour,
2½ tbsp. butter,
1 c. milk,
½ tsp. salt,
⅛ tsp. pepper,
1 tiny piece of mace.

25 oysters,
or 1 pt.,
1 tbsp. flour,
2 tbsp. butter,
1 c. milk,
½ tsp. salt,
⅛ tsp. pepper.

25 oysters, or 1 pt.,
⅓ c. butter,
1 c. dried bread or
cracker crumbs,
2 tbsp. melted butter,
½ tsp. salt,
⅛ tsp. pepper,
3 or 4 tbsp. oyster liquid,
a little nutmeg or
ground mace, if de-
sired.

2 doz. large oysters,
2 eggs,
½ tsp. salt,
⅛ tsp. pepper.

1 pt. fish,
1½ c. white sauce,
¾ c. crumbs,
2 tsp. butter.

1 qt. oysters,
2 c. stale crumbs,
½ c. melted butter,
1 tsp. salt,
¼ tsp. pepper,
oyster liquid or milk,
or both, 6 tbsp.

6 large potatoes,
1 tsp. salt,
¼ tsp. pepper,
2 tbsp. butter,
1 c. milk,
3 tbsp. butter.

Other vegetables, such as corn and tomatoes, may be scalloped.

SCALLOPED EGGS.

Chop egg finely; sprinkle bottom of baking dish with crumbs; cover with one-half the eggs, eggs with meat, meat with sauce; repeat. Cover with remaining crumbs. Place in oven on centre grate and bake until crumbs are brown. Ham is the best meat to use for this dish. Chicken, veal or fish may be used.

6 hard cooked eggs,
 $\frac{3}{4}$ c. chopped meat,
 $\frac{3}{4}$ c. buttered crumbs,
 1 pt. white sauce.

CROQUETTES.

MATERIALS.

The usual croquette mixture consists of two parts of chopped, cooked meat or cooked, flaked fish to one part of thick white sauce. Chicken, veal, cheese, macaroni, rice and potatoes may be made into croquettes.

Rice and potato croquettes do not need white sauce. Why?

SHAPING AND CRUMBLING.

Put on a board a heap of dried crumbs, sifted, shredded wheat or bread crumbs. Break an egg into a plate, add a tablespoon of water and beat enough to mix. With two spoons or spatules shape croquette mixture into balls; roll them into cylinders, roll them in crumbs. Lift them into the egg one by one, dipping egg over them until every bit of surface is covered; roll them in crumbs again and lay them carefully aside. If allowed to stand for thirty minutes so the albumen may harden, they are easier to handle. Fry in frying basket in deep fat smoking hot. When golden brown, lift the basket, drain and set the croquettes on soft paper in pan to remove fat. Arrange on platter, garnish and serve.

WHITE SAUCE FOR CROQUETTES.

2 tbsp. butter, 1 c. milk, $\frac{1}{4}$ c. flour, 1 tsp. salt, $\frac{1}{8}$ tsp. white pepper.

SALMON CROQUETTES.

2 c. flaked salmon, 1 c. thick white sauce, 1 tsp. lemon juice, $\frac{1}{8}$ tsp. salt (parsley may be added.)

CHICKEN CROQUETTES.

2 c. cooked chicken chopped fine, 1 c. thick white sauce, 1 tsp. onion juice, 1 tsp. nutmeg.

POTATO CROQUETTES.

2 c. mashed potatoes, $\frac{1}{8}$ tsp. white pepper, $\frac{1}{2}$ tsp. salt, $\frac{1}{4}$ tsp. celery salt, 2 tbsp. butter, 1 yolk.

Beat the yolk; mix it with the potato and add other ingredients. Heat the mixture in a saucepan, stirring; when it leaves the side of the pan, turn it into a flat dish, when cool, shape into cylinders, roll in eggs and crumbs and fry.

SANDWICHES.

Sandwiches are best when prepared just before serving, but for the lunch or picnic basket they may be kept wrapped in confectioners' or paraffine paper. For large companies they may be kept wrapped in a damp cloth, wrung as dry as possible, then surround with a dry cloth, or cover the sandwiches, neatly piled, with a large earthen bowl.

The rules for salads hold good at all times for sandwiches. Any variety of bread twenty-four hours old may be used. Sometimes two varieties are combined in the same sandwich. Let the bread, freed from crust, be cut into slices one-eighth inch thick. Use the trimmings for bread sauce, puddings, or bread crumbing. Cream the butter to insure its spreading smoothly and evenly. Avoid spreading either the butter or the filling over the edges. When slices of meat are used, let them be cut as thin as wafers and use more than one in each sandwich. Cold meats may be

minced fine and a little salad dressing used with them. Salted meats and fish give sandwiches a very pronounced flavor; acid in the form of lemon juice, chopped pickle or capers is an improvement to these and all fish sandwich mixture. Sweet sandwiches are offered with cocoa and tea; bread or lady fingers, yellow or white, may be used as a foundation for these; jams marmalades, etc., are the usual fillings. Sandwiches are daintier if made small.

SARDINE SANDWICHES.

Remove the skin and bone from the sardines; mince fine with the yolks of eggs and the butter; season to taste with paprika and lemon juice. Spread crescent or other shaped pieces of bread with the paste and press together in pairs. Serve on a napkin; ornament the dish with cress and slices of lemon.

6 sardines,
6 hard cooked egg yolks,
3 tbsp. butter,
lemon juice,
paprika.

HAM AND EGG SANDWICHES.

Mince the meat very fine; add the seasonings and eggs; mash all together to a smooth paste. Spread on buttered bread prepared for sandwiches and press two pieces together; serve at once.

$\frac{1}{2}$ c. lean ham,
2 tbsp. fat ham,
 $\frac{1}{3}$ c. butter,
2 tbsp. white sauce,
yolks of 4 hard-cooked
eggs,
 $\frac{1}{2}$ tsp. prepared mustard,
1 tsp. chopped capers.

LETTUCE SANDWICHES.

Prepare the bread as for sandwiches and butter it. Lay one or two tender lettuce leaves on a slice of bread spread with a thick cooked salad dressing, and press another slice of bread over it. Trim off the edges and serve at once.

BOSTON BROWN BREAD SANDWICHES.

Cut the bread very thin and spread lightly with butter. Stew the raisins until soft; add the sugar and cook a few minutes longer; drain off the juice, grind or chop fine; also grind the nuts fine, then add to the raisins and mix well. Spread on the brown bread and press together in pairs. Serve at once.

1 c. raisins,
 $\frac{1}{4}$ c. sugar,
 $\frac{1}{2}$ c. English walnuts.

FLOUR.

KINDS.

Wheat, rye, corn, buckwheat, rice, barley and some other grains.

They are milled by cleansing, grinding and bolting.

Wheat is the most important and is an annual grass of an unknown origin, but very old, and grows in all moderate climates. When it is ripe and ready to cut the grain is a light yellow; it is then separated from the husk and stalk. Each grain of wheat has four coatings; the outside is hard and is called bran; the next contains gluten; the third, fat and germ, the fourth or center, starch.

There are two kinds of wheat and they yield different flour.

Winter or Soft.—Winter or soft is sown in the fall; endures cold and dampness of the winter; is soft and starchy, and is used for cake and pastry. Why?

Spring or Hard.—Spring wheat is sown in the spring; grows up quickly and is hard. Grows mostly in Northern States.

This spring wheat yields a flour rich in gluten, makes an elastic dough, necessary to produce light bread. It is known (1) by its creamy color; (2) its great capacity for absorbing water; (3) its gritty feeling; (4) and by caking slightly when squeezed in the hand.

Experiment 1. Mix one-fourth cup of flour to a stiff dough with a little water; knead in a fine strainer; set in a bowl of water. What is left in the strainer? Feel it. Spread some to dry. Heat some in an oven. What happens?

Experiment 2. Test sediment in water in two ways.

COMPOSITION.

All foodstuffs necessary for growth of body.

Starch, fat, water, gluten and mineral salts.

Gluten is valued as a tissue-builder.

Mineral salts, as bone and nerve-builders.

BATTERS AND DOUGHS.

Dough means "that which is moistened."

Batter means "that which is beaten."

Pour Batter is one measure of liquid with one to one and a half measures of flour.

Drop Batter is one measure of liquid with two measures of flour.

Dough is a mixture stiff enough to be handled on a board.

A soft dough is one measure of liquid to three measures of flour.

A stiff dough is one measure of liquid to three or more measures of flour.

A mixture of flour and liquid, when cooked, would be hard and indigestible; it needs something to lighten it. The simplest means would be by beating air into it. Beating forms small bubbles, which expand when heated. Compare with soap bubbles.

Baking hardens the walls of the bubbles and prevents them from breaking.

Eggs are a great help in making mixtures light. The cold air which has been beaten into the eggs expands as soon as the mixture gets hot to several times its original volume. The walls of the little air cells consist of egg albumen, which hardens almost immediately, preventing the escape of the heated air.

Thin batters, like popover mixtures, contain more water than is needed to combine with the starch of the flour. So some of it is changed to steam, which helps in raising the mixture.

POUR BATTERS.

POPOVERS.

Mix salt and flour; add milk gradually; add egg, unbeaten, and the melted butter; beat *five* minutes with a fork or Dover egg beater. Pour into *hot* buttered iron gem pans or popover cups and bake thirty or thirty-five minutes in a hot oven.

1 c. flour,
 $\frac{1}{4}$ tsp. salt,
 $\frac{7}{8}$ c. milk,
 1 egg,
 1 tsp. melted butter.

GRIDDLE CAKES.

Sift flour, salt and baking soda together; separate eggs; beat yolks light, stir the milk into the flour. Add the beaten yolk and beat all together until well mixed; beat whites and add last, folding in carefully. Have griddle hot and using a piece of beef suet on a fork or drippings applied with a swab made by tying a strip of clean cloth around the end of a stick or fork; grease the griddle all over. Bake by spoonfuls, and as soon as the cakes are full of bubbles, turn quickly with a broad knife or cake turner. Never turn twice.

2 c. flour,
 $\frac{1}{2}$ tsp. salt,
 1 tsp. baking soda,
 2 c. sour milk,
 2 eggs.

RICE GRIDDLE CAKES.

Pour milk over rice and salt; all yolks of egg beaten until thick and lemon colored; add butter, then flour, and last the white of eggs beaten stiff.

1 c. milk,
 1 c. warm boiled rice,
 $\frac{1}{2}$ tsp. salt,
 2 egg yolks,
 1 tbsp. melted butter,
 $\frac{7}{8}$ c. flour,
 2 egg whites.

CREAM PUFFS.

Heat the butter and water until the water comes to a boil. Add the flour all at once and mix thoroughly. Cook, stirring constantly, until the mass leaves the sides of the pan in a smooth ball of dough. Add the eggs unbeaten and one at a time. Beat until thoroughly mixed. Drop by tablespoonfuls on buttered baking sheets and bake in a moderate oven thirty or thirty-five minutes. When cool, fill with whipped cream, sweetened and flavored or with cream filling.

1 c. hot water,
 $\frac{1}{2}$ c. butter,
 1 c. pastry flour,
 4 eggs.

CREAM FILLING.

Mix flour, sugar and salt; add the hot milk and cook until thick and smooth. Pour this into the eggs which have been beaten slightly and cook over hot water for a few minutes. Remove from the fire, and, when cool, add flavoring. Make a small hole in the side of each cream puff and with a teaspoon put it in.

$\frac{1}{2}$ c. flour,
 $\frac{7}{8}$ c. sugar,
 $\frac{1}{8}$ tsp. salt,
 2 c. hot milk,
 2 eggs.
 1 tsp. vanilla.

BATTERS LIGHTENED WITH GAS.

CORN.

With the exception of wheat, corn is raised more than any other grain in North America. It contains a great deal of starch and more fat than any cereal, and is, therefore, a good winter food. It also contains a large amount of muscle-building substance and mineral salts, and is a good food for strong, active people.

From corn are made hominy, grits, cornmeal, cornstarch and corn flour. The grains of corn are first dried, then ground up fine and coarse, to make the different products.

Cornmeal spoils very easily, so keep only a small amount on hand at a time.

Cornmeal is scalded to soften the starch; the time in the oven is not long enough to thoroughly cook it otherwise.

MOLASSES.

The sweet juice obtained by crushing the stalks of sugar cane is boiled down to a thick syrup. As it cooks, part of it separates into crystals. Molasses is the remaining liquid, which will not crystallize. Owing to recent improvements in sugar making, it is possible to crystallize almost all of the juice, so that there is very little molasses left. In consequence the substance now sold as molasses is made artificially from glucose, colored and flavored with a little of the true product. In the United States a considerable amount of molasses is made from the sorghum plant. It is never made from beets. Molasses contains about 30% of water, a large amount of sugar and certain salts and acids. It is used on account of its agreeable flavor, in making such dishes as gingerbread, steamed puddings, etc. Also to supply the acid necessary to set free the carbon dioxide from the soda.

Baking Soda is one of the class of substances called carbonates. It is an alkali made from common salt. It is the only alkali used in cooking.

When acid is added to an alkali or carbonate, in the presence of moisture, a gas is formed called carbon dioxide, which produces effervescence. This carbon dioxide formed in the batter from the union of the baking soda and the acid in the sour milk or molasses expands when heated, making the mixture light and porous.

Experiment No. 1. Mix soda and sour milk.

Experiment No. 2. Mix soda and water. Note the results and compare.

Experiment No. 3. Put a little molasses into a glass; add some baking soda and warm water. What happens? Repeat, using cream of tartar, vinegar and lemon juice instead of the molasses. What must the molasses, sour milk, etc., contain in order to bring about this reaction? Why will not the cornbread made by the following recipe be sour?

CORNBREAD No. 1.

Sift the meal and scald with boiling water; allow to cool. Sift flour, salt and soda together and add to the cornmeal and slightly beaten egg. Add milk and lastly the melted butter. Pour into a hot greased pan or gem pans. Bake in a moderate oven twenty minutes or until browned nicely.

2 c. meal,
1 c. flour,
1 c. sour milk,
 $\frac{3}{4}$ c. boiling milk,
1 tsp. salt,
 $\frac{1}{2}$ tsp. soda,
1 egg,
1 tbsp. melted butter,
lard or drippings.

CORNBREAD No. 2.

Sift dry materials together and chop in butter. Beat egg and add to milk and pour slowly into dry materials, mixing well. Pour into hot greased pan and bake in moderate oven about thirty minutes. (This may be mixed in same manner as batter cake).

$\frac{3}{4}$ c. flour,
 $\frac{3}{4}$ c. cornmeal,
 $2\frac{1}{2}$ tsp. B. P.,
 $\frac{3}{4}$ tsp. salt,
1 tbsp. butter,
1 tbsp. sugar,
1 or 2 eggs,
 $\frac{3}{4}$ c. milk.

DIRECTIONS FOR STEAMING.

A mould or tightly covered tin can may be used; it should be thoroughly greased, and, if it has no cover, a strong piece of greased brown paper may be tied over the top. Place the moulds in a steamer over boiling water, or on a rack in a kettle of boiling water. Keep the water boiling, and, as it evaporates, replenish with more of the same temperature. When steamed long enough, place the moulds, uncovered, in the oven for a few minutes.

STEAMED BROWN BREAD.

Sift the dry ingredients together several times. Mix the molasses and sour milk together and add to the dry ingredients; beat well. Put into greased moulds and steam three hours.

2 c. cornmeal,
2 c. graham flour,
2 tsp. soda,
1 tsp. salt,
2 c. sour milk,
1 c. molasses.

FRUIT PUDDING.

Mix and sift the flour, salt, baking powder and nutmeg. Add the raisins and currants; mix the molasses and sour milk with the suet. Combine the mixtures and beat thoroughly. If put into small molds, steam $1\frac{1}{4}$ hours; if in a large mold, $2\frac{1}{2}$ hours.

2 c. flour,
4 tsp. baking powder,
 $\frac{1}{4}$ tsp. salt,
 $\frac{1}{2}$ c. beef suet chopped
fine,
 $\frac{1}{4}$ c. molasses,
 $\frac{1}{2}$ tsp. nutmeg,
 $\frac{1}{2}$ c. raisins,
 $\frac{1}{2}$ c. currants,
 $\frac{1}{2}$ c. sour milk.

HARD SAUCE.

Cream the butter; add the sugar gradually, beating until light and creamy; add the flavoring and beat again.

4 tbsp. butter,
 $\frac{1}{2}$ c. powdered sugar,
 $\frac{1}{2}$ tsp. vanilla or nutmeg.

LEMON SAUCE.

Mix the sugar and flour thoroughly, then add the boiling water slowly. Cook five to eight minutes, stirring constantly. Add the lemon rind and juice, then the butter. Stir until butter is melted, then serve at once. If sauce is too thick, add a little water. For vanilla sauce, substitute 1 tsp. vanilla for the juice and rind of the lemon.

2 c. boiling water,
1 c. sugar,
2 tbsp. flour,
2 tbsp. butter, juice and
grated rind of 1 lemon.

FOAMY SAUCE.

Cream the butter, add the sugar and vanilla and the yolk of the egg beaten stiff; add the boiling water slowly. Beat the white until stiff; add this to the other ingredients and beat until the whole mixture is light and foamy.

3 tbsp. butter,
 $\frac{1}{2}$ c. powdered sugar
 1 tsp. vanilla,
 1 egg,
 $\frac{1}{2}$ c. boiling water.

YELLOW SAUCE.

Beat yolks of eggs until thick; add one-half the sugar gradually; beat the whites of the egg until stiff; add gradually the remaining sugar. Combine mixture and add vanilla.

2 eggs,
 1 c. powdered sugar,
 2 tsp. vanilla.

BATTERS LIGHTENED WITH GAS AND EGGS.

STUDY OF SPICES.

Spices are parts of aromatic plants used to season foods. They belong to that class of substances spoken of as condiments. As the term is generally used, condiments are eaten with meat and combined with salt, itself a condiment; while spices are usually added to articles containing sugar.

Condiments have no food value, but are valuable in moderate quantities, as they serve to make the food more palatable and by their taste and odor stimulate the flow of the digestive juices.

The spices most commonly used are cloves, cinnamon, pimento or all-spice, nutmeg, mace and ginger.

Cloves are the flower buds of an evergreen tree found in the East Indies.

Cinnamon is the inner bark of a tree similar to the laurel.

Cassia is the inner bark of a species of cinnamon called Chinese cinnamon.

Nutmeg is the kernel of the fruit of an evergreen.

Mace is the thin covering of the nutmeg.

Ginger is the root of a flag-like plant.

Allspice consists of the berries of the cassia tree. They are called all-spice because their aroma resembles that of a variety of spices.

GINGERBREAD.

Sift together, flour, soda, salt and spices. Cream together the sugar and shortening; add the molasses and stir in part of the milk and part of flour until all is added; add the eggs well beaten; pour in greased and floured pan and bake in hot oven about 30 minutes.

$\frac{1}{4}$ tsp. salt,
 $\frac{1}{2}$ tsp. soda,
 1 tsp. ginger,
 $\frac{1}{4}$ tsp. cinnamon,
 $1\frac{1}{8}$ c. flour,
 $\frac{1}{2}$ c. sugar,
 $\frac{1}{3}$ c. shortening,
 $\frac{1}{2}$ c. molasses,
 $\frac{1}{2}$ c. sour milk,
 1 or 2 eggs.

GINGERBREAD WITHOUT EGGS.

Sift flour, salt and spices together; add half the soda to the milk and half to the molasses, beat each until light, add to the flour and spices; add the melted butter; pour into greased and floured pan and bake in moderate oven about 30 minutes.

$2\frac{1}{2}$ c. flour,
 $\frac{1}{4}$ tsp. salt,
 1 tsp. cinnamon,
 2 tsp. ginger,
 2 tsp. soda,
 1 c. sour milk,
 1 c. molasses,
 4 tbsp. butter.

MOLASSES COOKIES.

Cream butter and sugar and add the molasses. Sift in the ginger and cinnamon; add the soda dissolved in the water and sift in enough flour to make a soft dough. Roll $\frac{1}{4}$ -inch thick. Cut out and bake in hot oven. Whole wheat flour may be used instead of white flour.

$\frac{1}{2}$ c. butter,
 $\frac{1}{2}$ c. sugar,
 1 c. molasses,
 1 tsp. ginger,
 1 tsp. cinnamon,
 1 tsp. soda,
 $\frac{1}{2}$ c. water,
 $2\frac{1}{2}$ c. flour about.

DOUGHS MADE LIGHT WITH BAKING POWDER.

A dough is a stiff mixture of flour, liquid and other ingredients.

APPROXIMATE RULE FOR PROPORTIONS.

Soft dough, one measure of liquid to three measures of flour.

Stiff dough, one measure of liquid to four measures of flour.

Pastry flour is most used in baking powder mixtures. When bread flour is substituted, take two tablespoonfuls from each cup. Baking powder mixtures should be handled as little as possible and cooked as soon as mixed, generally in a hot oven.

Batters and doughs are made light and porous by the presence of a gas, which expands by the heat during the cooking.

Carbon dioxide is obtained by the action of yeast during fermentation or is set free by chemical action from different substances containing the elements of which it is composed.

BAKING POWDER.

Experiment 1. Put one-fourth teaspoonful of soda and one-half teaspoonful of cream of tartar into a glass. Mix and pour hot water over it. What is the effervescence?

Experiment 2. Put one teaspoonful of baking powder into a glass; pour hot water over it.

Experiment 3. Pour cold water over one teaspoonful of baking powder. Which causes the more rapid escape of gas?

The best baking powders are made of bicarbonate of soda, cream of tartar and a small quantity of cornstarch. The cornstarch is used to absorb moisture and keep the mixture dry.

Bicarbonate of soda (cooking soda) is an alkaline substance containing carbon dioxide. It is made from salt.

Cream of tartar is an acid substance made from crystals called argols, deposited on the sides and bottoms of casks containing grape wine.

Acids and alkalies are opposite in their nature.

RECIPE FOR BAKING POWDER.

Sift the soda; add cornstarch and sift five times; add cream of tartar; mix thoroughly and sift six or seven times; keep in tin or glass cans closely covered.

BAKING POWDER BISCUITS.

Mix and sift dry ingredients; chop in the shortening with a knife until fine, like meal; add about half the milk, then add more gradually to make a soft dough, mixing with a knife. When smooth, turn the dough on to a floured board, pat or roll out about one-half inch thick. Cut with a floured biscuit cutter; place close together on a baking pan. Bake in a hot oven 12 to 15 minutes. Equal parts of water and milk may be used instead of all milk.

FRUIT DUMPLINGS.

Make a dough as for biscuits; pat and roll out one-fourth inch thick. Cut into four-inch squares; place in the center of each square an apple or other fruit, sprinkle with sugar and cinnamon or nutmeg. If the fruit is hard, first steam five to ten minutes. Moisten the edges of the dough with cold water; fold so that the corners meet and the fruit is covered; press the edges together. Place in a greased pan and bake in a hot oven about 20 minutes. The dumplings may be steamed by placing them in a buttered pan or paper and cooking in a steamer over boiling water one-half hour. Serve with cream or a sweet sauce.

¼ lb. bicarbonate of soda,
½ lb. and 1 oz. cream of tartar,
⅛ lb. cornstarch.

2 c. flour,
3 tsp. baking powder,
½ tsp. salt,
2 to 3 tbsp. shortening,
about ¾ c. milk.

Dried, fresh or canned fruits.

SHORT CAKE.

Cream the butter and add the sugar gradually; sift the flour and baking powder together and add to the mixture alternately with the milk. Bake in a buttered pan 20 minutes in a hot oven. When done, remove from pan, cut edges with a hot knife and then split cake in half; butter lightly. Cover first half with crushed fruit, sweetened to taste. Place second half over it and garnish the top with fruit. Serve with whipped cream. Strawberries, raspberries, peaches or stewed fruits may be used.

2 tbsp. butter,
 $\frac{1}{4}$ c. sugar,
 $\frac{2}{3}$ c. milk,
 $1\frac{1}{2}$ tsp. baking powder,
 $1\frac{1}{2}$ c. flour,
 $\frac{1}{4}$ tsp. salt.

DOUGHS LIGHTENED WITH YEAST.

Yeast is a vegetable germ or plant of the fungus family, to which mushrooms and toadstools belong. Yeast plant needs no light, and like other fungi, it grows and multiplies rapidly. It is the simplest form of vegetable life, being only a small cell with a thin skin and full of a liquid which contains the germ life. It is generally oval in shape and so small that it can not be seen without a very strong microscope. Under a microscope new cells may be seen building out of old ones, forming branching chains. These cells are found in fruit juices and sprouting grains. Like all plants, yeast is killed by extreme heat and its growth is retarded by extreme cold. It grows best and quickest at temperatures between 72 and 90 degrees Fahrenheit. It needs water, and either some nitrogenous food-stuffs, such as gluten, or some mineral matter containing nitrogen, to feed upon.

Three kinds of yeast are used for bread-making—dry, liquid and compressed. A good compressed yeast cake is known by its light, even color. Liquid yeast is yeast cultivated in a mixture of potatoes, sugar, water and hops.

THE GROWTH OF YEAST BY EXPERIMENTS.

1. Mix one tablespoonful flour, one of sugar and three-fourths of a cake of yeast to a smooth paste with one-fourth cup lukewarm water. Divide the mixture between three test-tubes.
2. Place one test-tube in boiling water.
3. Place one test-tube in lukewarm water.
4. Place one test-tube in cold water or cracked ice.
5. Place one-fourth of a yeast cake in a test-tube and mix with lukewarm water; and place in lukewarm water; with salt; sugar.

Give results. Compare the amount of gas formed under the different conditions.

Bread dough is the best soil for growing yeast. The yeast changes some of the starch into a kind of sugar, and the sugar into carbon dioxide gas and alcohol. The gas, being lighter than the dough, rises, and in its effort to escape, puffs up the elastic glutinous mass to two or three times the original size; when this expansion has reached the desired limit, we check the fermentation by kneading and baking. The alcohol escapes in the oven; some of the starch is changed into gum or dextrine and forms the brown crust. If the fermentation goes too far, acetic fermentation sets in and gives the bread a disagreeable taste and smell.

BREAD IS BAKED.

1. To kill the ferment.
2. To make the starch soluble.

3. To drive off alcohol and carbon dioxide.
4. To form a brown crust.

When bread is done, it will not cling to the sides of the pan, and may be easily removed. Remove loaves at once from the pans and place side down on a wire cooler. If a soft crust is desired, cover with a towel while cooling.

WHOLE WHEAT BREAD.

Put salt, sugar or molasses in a mixing bowl, add milk and water; when cool add the yeast that has been mixed with one-fourth cup lukewarm water, then stir in half the flour. Beat until full of bubbles; then add enough more flour to make a dough stiff enough to knead; turn out on a slightly floured board, leaving a clean bowl. Knead until smooth and elastic. Shape into loaves, place in a greased pan, brush over with melted butter; cover; let rise to double its bulk and bake in a hot oven about three-quarters of an hour.

$\frac{1}{2}$ c. milk,
 $\frac{1}{2}$ c. water,
 $\frac{1}{2}$ tsp. salt,
 1 tbsp. sugar or molasses,
 1 cake yeast,
 $\frac{1}{4}$ c. lukewarm water,
 3 to $3\frac{1}{2}$ c. flour.

WHITE BREAD—QUICK PROCESS.

Put salt, sugar and shortening into mixing bowl; pour on hot milk and water. When mixture is lukewarm add dissolved yeast. Stir in enough flour to make a batter; beat well, then add more flour, a little at time to make a stiff dough, mixing with a knife. Turn on a floured board; knead until it is smooth, elastic and does not stick to the board. Put into a greased bowl, cover closely and let it stand in a warm place (about 75 F.) until double in bulk. This will take between two and three hours. Knead again until fine grained; shape into a loaf and place in a warm greased pan. Cover and put in a warm place. When double in bulk, bake in a hot oven. Bake fifty to sixty minutes.

$\frac{1}{2}$ tsp. salt,
 1 tsp. sugar,
 1 tsp. shortening,
 $\frac{1}{2}$ c. hot water,
 $\frac{1}{2}$ c. hot milk,
 1 cake yeast,
 $\frac{1}{4}$ c. lukewarm water,
 3 c. bread flour.

BREAD—SLOW PROCESS.

Use one-half as much yeast; allow the bread to rise over night; knead the second time in the morning. Proceed the same as in the quick process.

PARKER HOUSE ROLLS.

Add butter, sugar and salt to milk; when lukewarm add dissolved yeast and three cups of flour. Beat well, cover and let rise until light. Beat again; add flour to make a stiff dough and knead; let rise until double in bulk; toss on floured board, pat and roll out about one-third inch thick. Cut out with floured biscuit cutter; crease through the center of each roll with the floured back of a knife; brush one-half of each with melted butter, fold the press together. Place in greased pan one inch apart; cover; set in a warm place until double in bulk. Bake in hot oven 12 to 15 minutes.

2 c. hot milk,
 3 tbsp. butter,
 2 tbsp. sugar,
 1 tsp. salt,
 1 yeast cake dissolved in
 $\frac{1}{4}$ c. lukewarm water,
 6 c. flour about.

GERMAN COFFEE BREAD.

Add sugar to milk. When lukewarm add dissolved yeast and flour to make a batter. Cover and let rise; add salt, melted shortening, egg well beaten, flour to make a soft dough and raisins. Cover and let rise again. Spread in a buttered baking pan about one inch thick; cover and keep in a warm place until double in bulk. Before baking brush top with beaten egg and cover with the following mixture: Melt three tablespoons of butter; add one-third cup of sugar and one teaspoonful of cinnamon. When sugar is partly melted add three tablespoonfuls of flour. Spread on cake; bake cake about 40 minutes.

1 c. hot milk,
 $\frac{1}{3}$ c. shortening,
 $\frac{1}{4}$ c. sugar,
 $\frac{1}{2}$ tsp. salt,
 1 egg,
 $\frac{1}{2}$ cake yeast dissolved
 in $\frac{1}{4}$ c. lukewarm
 water,
 $\frac{1}{2}$ c. stoned raisins, flour.

CAKE.

All cakes belong to one of two classes—*butter cakes* and cakes made without butter, or *sponge cakes*. Butter cakes include cup cake, pound cake, spice cake, etc. Sponge cakes includes angel and sunshine cakes.

GENERAL DIRECTIONS.

Good cake requires good materials—good butter, fresh eggs and fine granulated or powdered sugar.

Use pastry flour and sift before measuring.

Never melt butter; if hard, warm the bowl before creaming.

Butter cakes are varied by changing the flavoring; by adding nuts, fruits, chocolate or spices.

For chocolate cake melt the chocolate over hot water and add after the yolks of eggs.

Dredge raisins and currants with flour and add to the mixture just before the egg white.

Spices are sifted several times with the flour and baking powder.

ORDER OF WORK.

1. Get out all necessary utensils and materials, then make all measurements.

2. Light the gas range, or, if using a coal range, arrange the dampers so that the oven will be ready by the time the cake is mixed.

3. Prepare pans and mix the cake.

4. Before adding the flour test the oven.

A butter cake usually contains from one-third to one-half as much butter as sugar, and about half as much liquid as flour.

Butter or other shortening counts as liquid, since it melts in the oven.

A cake with fruit should be a little stiffer than one without.

Sour milk and molasses do not thin a mixture as much as sweet milk or water.

PREPARATION OF PANS.

For *butter cakes* grease the pan with lard or butter and dredge slightly with flour. For large cakes, line the pan with paper and grease it.

Sponge cakes are baked in ungreased pans if the pans are kept exclusively for sponge cakes.

THE OVEN.

The oven should be less hot for cake than for bread. It is right for butter and sponge cakes baked in loaves if it turns a piece of writing paper light brown in five minutes. For layer and small cakes it should be hotter.

Bake loaf cakes from forty-five minutes to one hour; layer cakes and small cakes, from twenty to twenty-five minutes. The cake is done when it shrinks from the side of the pan. When a knitting needle or clean straw put into it comes out clean, or when pressed lightly on top with the finger the cake springs back into place.

To turn out of the pan, loosen around the edges with a knife and slip out on a wire cake cooler or a clean towel. If it sticks, turn it upside down, place a damp cloth over the bottom of the pan and let it steam for a few minutes.

PLAIN CAKE.

Cream the butter, add the sugar, gradually, then yolks of eggs, well beaten. Sift flour and baking powder together and add to the mixture alternately with the milk; add the flavoring and last the whites of eggs beaten stiff.

For chocolate cake add after the egg yolks one and one-half ounce, or three tablespoons of chocolate melted over hot water.

For gold cake, use the yolks of four eggs.

For white cake, leave out yolks and use whites of four eggs.

SPONGE CAKE.

Beat the yolks until thick and lemon colored. Add the sugar gradually and continue beating, then the lemon juice and rind and the flour, which has been sifted two or three times. Fold in the whites of the eggs, which have been beaten stiff. The salt should be added to the whites before baking.

ANGEL CAKE.

Add the salt to the eggs and beat to a foam; add the cream of tartar and beat until stiff; sift in the sugar, beating all the time; sift in the flour, slowly, mixing it with a light folding motion; add the vanilla. Bake in an unbuttered pan in a slow oven about one hour.

SUGAR COOKIES.

Mix like butter cakes. When stiff enough to roll turn out on a floured board and roll out, part at a time, one-fourth of an inch thick. Keep board and pin well floured; bake 15 minutes on shallow pans.

MOLASSES COOKIES.

Mix as for plain cookies. Roll out and bake according to directions for plain cookies.

BOILED ICING.

Boil sugar and water together until the syrup spins a thread. Beat white of egg until stiff and on it pour slowly the hot syrup, beating continually. When stiff spread on cake.

UNCOOKED ICING.

Sift the sugar, add the orange juice and rind, or lemon juice, and enough of the boiling water to make it spread smoothly.

¼ c. butter,
¾ c. sugar,
2 eggs,
1½ tsp. baking powder.
1½ c. flour,
½ tsp. vanilla or 1 tsp.
spice,
½ c. milk.

Yolks of 5 eggs,
1 c. sugar,
1 tbsp. lemon rind,
juice of ½ a lemon,
1¼ c. flour,
whites of 5 eggs,
¼ tsp. salt.

1 c. egg whites,
1¼ c. sugar,
½ tsp. cream of tartar,
¼ tsp. salt,
1 c. flour,
1 tsp. vanilla.

½ c. butter,
1 c. sugar,
1 egg yolk,
¼ c. milk,
2 tsp. baking powder,
about 3 c. flour,
a sprinkling of nutmeg
after cookies are cut.

½ c. butter,
1 c. sugar,
2 tbsp. molasses,
1 egg,
¼ c. milk,
1 tsp. baking powder,
¼ tsp. baking soda,
3 c. flour,
3 tsp. spices.

1 c. sugar,
½ c. boiling water,
white of 1 egg,
1 tsp. vanilla or
½ tsp. lemon juice.

1½ c. powdered sugar,
1½ tbsp. hot water,
1½ tbsp. orange juice,
rind of ½ orange or
1 tsp. lemon peel.

PASTRY.

GENERAL RULES.

1. To make good pastry use pastry flour.
2. Have everything cold.
3. Always roll the pastry one way.
4. In making a short crust, handle as little and as lightly as possible.
5. If a shining surface is desired, brush with beaten egg or milk.
6. Cook pastry in a hot oven and have the heat greatest at the bottom so that it may rise before browning.

7. Pastry is much improved if allowed to stand on ice before using.

Pastry is difficult to digest because the starch grains must absorb water, swell and burst before they can be digested. The small amount of water used in making pastry does not furnish enough liquid to accomplish this. Moreover, the particles of starch in pastry are enclosed in fat, and digestive fluids can not reach the starch readily.

PASTRY.

Sift flour, salt and sugar together; chop in lard and add the water slowly, handling lightly. Put the dough on a board, roll out, spread with butter; fold three times and roll like jelly cake. Cut the pastry across and roll out to fit size of pie plate.

$\frac{1}{2}$ c. butter,
 $\frac{1}{2}$ c. lard,
 3 c. flour,
 1 tsp. salt,
 1 tsp. sugar,
 1 c. ice water.

LEMON PIE.

Mix the cornstarch with a little cold water; add the hot water and boil for five minutes; remove from the fire, add the sugar and butter well creamed together and mix with the yolks of the eggs and juice and grated rind of lemon. Line pans with pastry rolled one-eighth inch thick; prick the bottom of the paste and bake. When almost done, fill the pans to the depth of three-fourths of an inch with the lemon filling and cook until the paste is done. Cover with a meringue made from the whites of the eggs beaten stiff with one tablespoonful sugar to one egg. Cook slowly until slightly brown.

1 c. boiling water,
 1 c. sugar,
 3 tbsp. cornstarch.
 1 tbsp. butter,
 2 eggs,
 2 lemons.

CHEESE STRAWS.

Roll pastry one-eighth inch thick and cut into two pieces. Sprinkle one piece with grated cheese, seasoned with salt and cayenne pepper or paprika. Place the other half on top of this piece and cut into strips one-half inch wide and five inches long. Bake until crisp and brown.

APPLE PIE.

Line a rather deep pie plate with pastry and fill with tart apples, peeled and cut into thin slices. Sweeten, using about one cup sugar for a large pie, and season with cinnamon or nutmeg and one tablespoonful butter. Cut a large piece of pastry to completely cover the top and cut in several places to allow the steam to escape. Bake in a moderate oven until the apples are tender and the pastry cooked. The sugar, butter and cinnamon may be omitted until the pie is done, when the top crust is lifted and the sugar and seasoning sprinkled over the apples. Cooked in this manner the apples are finer flavored.

GELATINE DESSERTS.

Gelatine is derived from substances contained in the bones, skin and connective tissue of animals. These substances are changed into gelatine by cooking several hours in boiling water. The connective tissue of young animals are especially rich in gelatine-yielding material. Calves' feet is a

pure form of gelatine, but the purest form is isinglass a kind of gelatine obtained from the bladder of the sturgeon.

Gelatine contains nitrogen, hence belongs to a class related to the proteids called gelatinoids. It cannot build tissue, form muscles, nerves, etc., but yields energy and serves other purposes in the body which cause it to be known as a "proteid-sparer."

The food value of gelatine is not high, but it is very easy of digestion, and jellies prepared from it form an agreeable addition to the diet during convalescence, as well as in health. Gelatine is used for medicine capsules, photograph films and other purposes, as well as for jellies.

GENERAL DIRECTIONS.

First soften the gelatine by soaking in cold water, then dissolve in boiling water, *but never boil it*. If stirred much while hot, the gelatine may become stringy and refuse to jell; for this reason do not stir to help sugar to dissolve, but keep the gelatine mixture hot by setting the bowl over hot water. Strain through cheese cloth into mould and set away to cool. Use a mould of earthenware or enameled ware wet with cold water just before using. A two-ounce box of granulated gelatine holds five tablespoonfuls.

Fruit jellies may be made by adding various fruits, such as oranges, bananas, dates, figs, nuts, grapes, etc., to lemon jelly.

LEMON JELLY.

Soak gelatine in cold water; add salt; dissolve in boiling water; add sugar and lemon juice; strain into moulds that have been wet with cold water and chill.

1 tbsp. granulated gelatine,
 $\frac{1}{4}$ c. cold water,
 $\frac{3}{4}$ c. sugar,
 pinch salt,
 $1\frac{1}{4}$ c. boiling water,
 $\frac{1}{4}$ c. lemon juice.

SNOW PUDDING.

Make as for above and when gelatine forms beat with wire whip or Dover beater until fine of grain; whites of three eggs beaten stiff may be added. Serve with cream or soft custard.

FROZEN DESSERTS.

ICE CREAM.

A frozen dessert, most desirable for hot summer days. It is also a good food for many invalids, being wholesome, nutritious and cooling.

Experiment 1. Fill a cup with cracked ice. Take the temperature.

Experiment 2. Mix four tablespoonfuls of rock salt with the ice. Watch the thermometer.

Melting ice and salt reach a temperature below the freezing point of water. If packed around some other liquid, they draw the heat from it so fast that it freezes.

DIRECTIONS FOR FREEZING.

Put the ice into a strong canvas bag and pound until very fine. Use rock salt: Proportions: three measures of ice to one of salt. Pack ice and salt solidly in the freezer, around the can containing the mixture. Turn the crank slowly at first, to permit the mixture to become thoroughly chilled, then more rapidly until frozen. Cream frozen rapidly is coarse-grained.

PACKING.

Ice cream is much better if repacked and allowed to stand at least one hour before serving. Remove the dasher and repack with ice and salt, using one-fourth as much salt as ice. Cover with newspaper or heavy cloth.

ICE CREAM.

Mix well, being particular to have the sugar dissolve before freezing. If cream is too heavy, reduce with a little milk. Vanilla bean pulverized will give the cream a much more delicate flavor than the extract.

1 qt. cream,
1 c. sugar,
1 tbsp. vanilla.

FROZEN CUSTARD.

Scald the milk in a double boiler; beat the eggs slightly, adding half the sugar, and pour the milk slowly into this, stirring constantly. Pour back into double boiler; cook until the mixture begins to thicken, about 10 minutes; then add the rest of the sugar; cool; add cream and flavoring and freeze.

1 pt. milk,
1 tbsp. flour,
1 c. sugar,
2 or 3 eggs,
 $\frac{1}{8}$ tsp. salt,
1 pt. cream,
1 tbsp. flavoring.

LEMON ICE.

Make a syrup of the water and sugar by boiling them five minutes; add the grated rind of the orange and one lemon; cool; then add the juice; strain and freeze.

4 large lemons,
1 orange,
 $2\frac{1}{2}$ c. sugar,
1 qt. water.

PINEAPPLE SHERBET.

Make a syrup of the sugar and water by boiling them five minutes; cool; add all other ingredients and freeze.

1 can grated pineapple,
1 lemon (juice),
 $\frac{1}{2}$ tsp. gelatine (Knox),
dissolved,
1 pt. sugar,
1 qt. water.

INVALID COOKERY.

In preparing food for an invalid, the following points should be observed:

The preparation and serving of food is of especial importance in illness. Food for invalids should be perfectly cooked, attractively served, and all utensils used should be scrupulously clean.

Food should be suited to the digestive powers of the patient, and should be served in small quantities, just enough to satisfy hunger or to furnish needed strength.

In a severe illness the doctor prescribes the kind and amount of food to be given. In long and protracted illness it is necessary to take nourishing food in small quantities at frequent intervals. In short spells of illness it is sometimes best to go without food for a day or more so as to give the system complete rest.

The following foods are easily digested and are given to invalids; Milk, eggs (raw or slightly cooked), beef tea, gelatinous jellies, gruels, well cooked cereals, raw oysters, juice of oranges, grapes and other fruits, frozen desserts.

SERVING FOOD.

Use the daintiest dishes in the house. Place a clean napkin on a tray and, if possible, a fresh flower.

Serve everything in small quantities, as it is more tempting to a delicate appetite

Try to surprise the patients by some unexpected food, and in this way induce them to take nourishment.

Serve hot food hot and cold food cold.

Remove the tray as soon as food is eaten, as food should never stand in a sickroom.

MILK SHERBET.

Freeze the milk and sugar until partially stiffened. Add the lemon juice and freeze until stiff.

$1\frac{1}{2}$ c. milk,
 $\frac{1}{4}$ c. sugar,
 $\frac{1}{2}$ c. lemon.

LEMONADE.

Pare the lemon very thin, using only the yellow rind. Put the rind and sugar in a bowl, add the boiling water, cover tightly and let stand twenty minutes; add the juice and strain. This is very strong and may be weakened with a little ice or cold water.

1 lemon,
3 tbsp. sugar,
1 c. boiling water.

EGG LEMONADE.

Beat the egg well and add the sugar and lemon juice; add water slowly stirring until smooth and well mixed; strain and serve. A little grated nutmeg may be added if liked.

1 egg,
2 tbsp. sugar,
2 tbsp. lemon juice,
1 c. water.

EGG NOG.

Beat the egg, add the sugar, salt and flavoring; heat the milk and add slowly to the beaten egg; serve at once. Any flavoring, either spirits, vanilla or nutmeg may be used.

1 egg,
1 tbsp. sugar,
spk. salt,
1 c. milk,
1 tbsp. brandy or
 $\frac{1}{4}$ tbsp. vanilla, or
 $\frac{1}{8}$ tsp. nutmeg.

EGG IN NEST.

Beat the white of the egg with a f. g. of salt until stiff; pile lightly in an earthenware or small baking dish. Make a depression in the center of the white and into this slip the unbroken yolk. Cook slowly in a moderate oven until the white is slightly cooked. Sprinkle with a little salt and pepper and serve with toast. This may be placed on toast and cooked instead of using an earthenware cup, or it may be steamed.

1 egg, salt, pepper, toast.

OATMEAL GRUEL.

Cook all the ingredients together in a double boiler for two hours. Press through a strainer, dilute with milk or cream; reheat and serve. The well-beaten white of one egg stirred into the gruel makes it more nutritious.

$\frac{1}{4}$ c. oatmeal,
2 tsp. salt,
1 qt. water,
1 egg,
1 tsp. sugar,
nutmeg or vanilla to
flavor.

EGG GRUEL.

Heat the milk; beat the yolk of the egg until thick and light-colored, the white till stiff. Stir into the yolk the other ingredients in the following order; sugar, milk, beaten white and flavoring. Serve hot in a glass placed on a plate covered with a doily.

1 c. hot-milk,
nutmeg or lemon juice,
to flavor,
1 egg,
1 tsp. sugar.

PRESERVING.

Under ordinary conditions foods can not be kept for any length of time in a good, wholesome condition. Bacteria will find their way to the food and it will mould, decay and "spoil," for the spoiling of food is simply the result of its consumption by tiny living beings called bacteria. In order to prevent this we use various methods of preserving.

The methods generally used are cold storage, drying, salting, pickling, smoking, canning, by the use of oil and also by the use of antiseptics, such as borax and salicylic acid.

Preserving in the ordinary sense means the cooking of fruits in a thick syrup made of equal or nearly equal weights of sugar and fruit, little or no water being used, according to the fruit.

By this method the water is drawn out and the sugar takes its place. Preserving includes the making of jellies, jams and marmalades.

Canning is preserving sterilized foods in sterilized, air-tight cans or jars. Meats, fish, vegetables and fruits are thus preserved. In canning, fruits are rendered sterile, or free from germ life by boiling.

TO STERILIZE JARS.

Wash jars and fill with cold water; place on a rest in a boiler, surround the jars with cold water and heat gradually until the water boils. Keep jars in boiling water until ready to fill. Then empty and fill. Sterilize the covers of jars, also dip the rubber bands in hot water, but do not boil them. Use new rubbers each season.

CANNING FRUIT.

Sterilize the jars; prepare the syrup; boil it ten minutes; pare the peaches, dropping them into cold water. Put peaches and a few stones into syrup; cook the fruit until, when tried with a knitting needle it is found to be soft; then fill jars.

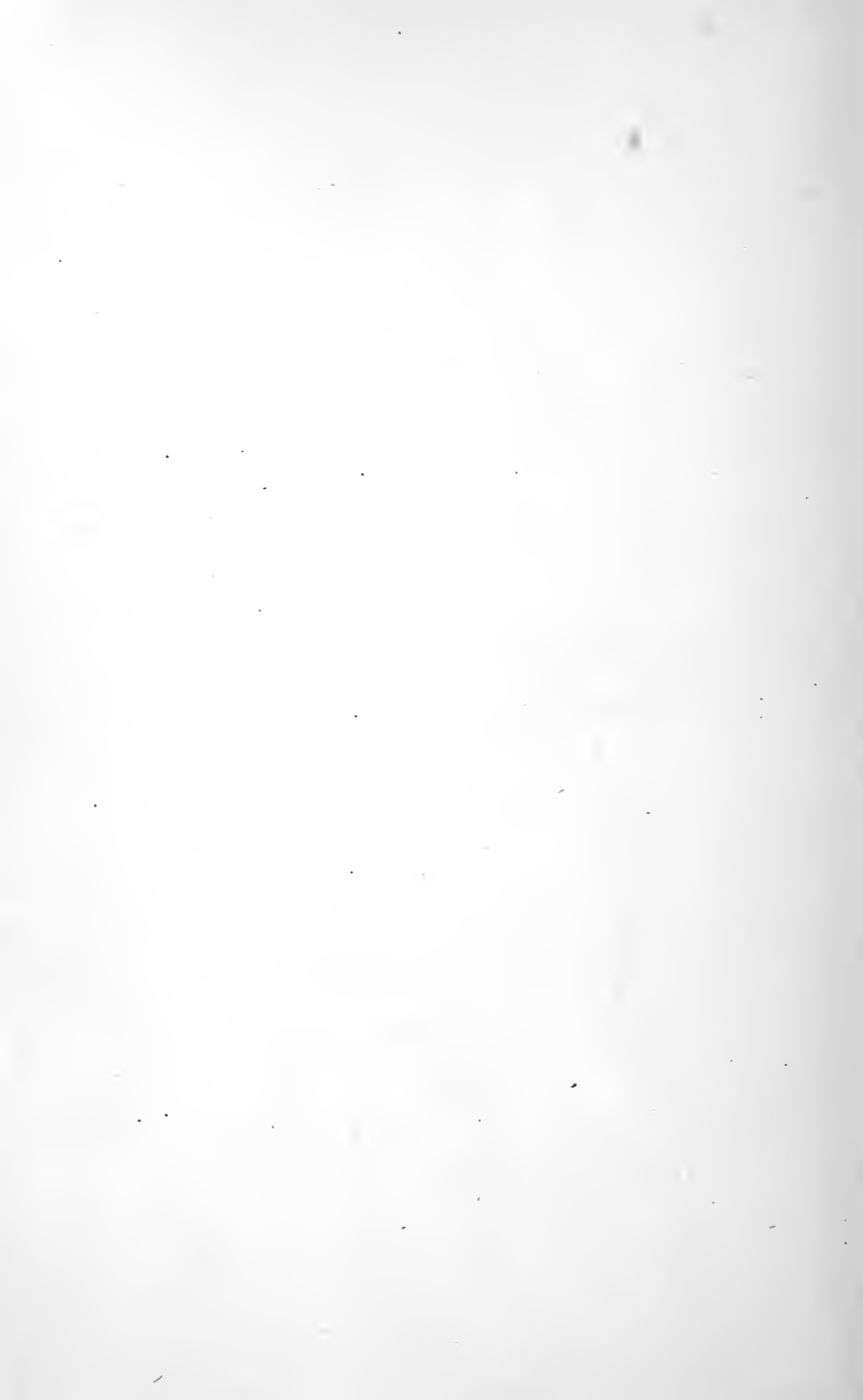
2 c. water,
1 lb. sugar,
3 lbs. peaches,

GENERAL DIRECTIONS FOR FILLING JARS.

Remove jars from boiling water; place fruit in jars, the rounded side of fruit toward the outside of the jar. Fill with syrup; use the blade of a silver knife to push the fruit away from jar to allow air bubbles to rise to surface and break. Fill to overflowing; if there is not sufficient syrup, use boiling water. Place rubber on jar and screw the cover tight. Turn the jar upside down to see if it is air-tight.

JELLIES.

Wash fruit and remove stems and imperfections. Cut large fruit into pieces. Watery fruits, such as grapes and currants, need no water. With apples and quinces use enough water to cover them. Cook fruit until juice flows. Remove from the fire and strain through double thickness of cheese cloth or jelly bag. Measure the juice and boil 20 minutes; add equal quantity of heated sugar; boil five minutes, or until jelly stiffens when tried on a plate; skim and turn into sterilized glasses and set aside to harden. Cover with melted paraffine. Keep in a cool, dark place.













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